

Meeting of Minds XXVII

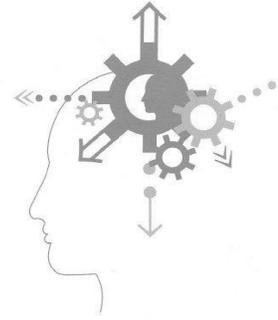
May 10, 2019

**Hosted by
The University of Michigan-Flint**



Meeting of Minds XXVII

Today, we celebrate the twenty-seventh annual **Meeting of Minds** Undergraduate Research Conference! The purpose of this meeting is to highlight the accomplishments of undergraduate students and their interactions with faculty members from represented universities.



Each year the meeting is held on the campus of one of the participating universities. This year, the University of Michigan-Flint will host 128 presentations. This year's conference is held in the Riverfront Event and Banquet Center, located on the University of Michigan-Flint campus.

The day consists of a morning poster and oral session, in addition to an afternoon poster and oral session. These sessions will take place in various locations throughout the Riverfront Center, with oral presentations located in the 2nd floor classrooms and the poster presentations located in the Riverfront suites. All presentation details are included in the program.

We would like to extend a special thanks to all faculty sponsors who generously devoted the time and provided the means for their students to present their research accomplishments. Faculty sponsors are listed following the students' names with each abstract.

MOM: A Brief History

Meeting of Minds had its gestation in Spring, 1992, when University of Michigan-Flint Dean Jackie Zeff proposed that the campuses in Flint and Dearborn join together to sponsor a symposium on undergraduate research for their students. As Zeff put the case for the conference at the time, "...one of the most engaging and transforming relationships between student and teacher is that of collaborators in a creative enterprise," and such relationships could be promoted through an undergraduate research symposium. A joint committee of faculty and students met from late 1992 to early 1993 to plan and implement the project. The committee "hoped this conference would be the first in a series, and that later conferences would include more colleges and universities in that area."

The first Meeting of Minds conference was held on May 14, 1993 at the University of Michigan-Flint. There was little doubt of the success of the event. As then University of Michigan-Dearborn Associate Dean Paul Zitzewitz noted about the conference, it "clearly generated excitement among the faculty and students who participated. I saw evidence of that excitement from seeing faculty members talking with their colleagues from other campuses; from hearing discussions among students, both Dearborn and Flint; and from observing new contacts made between Dearborn faculty and students."

Since its inception, Meeting of Minds has grown in size and scope. Conferences have been held every year since the first was held in 1993. Acting on the desire to include more institutions, the committee invited Oakland University to participate in 1995. In 1996, Meeting of Minds was held at Oakland University for the very first time.

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The University of Michigan-Flint is one of two regional campuses of the University of Michigan. UM-Flint is a comprehensive urban university of diverse learners and scholars committed to advancing local and global communities through education, research and service. The university values excellence in teaching, learning and scholarship; is focused on student success; and embodies the importance of engaged citizenship. Undergraduate and graduate degree programs are offered through five schools or colleges: the College of Arts and Sciences, the School of Education and Human Services, the College of Health Sciences, the School of Nursing and the School of Management. The university offers 138 bachelor programs, 28 master degrees, four professional doctoral degrees and two PhD programs across the five units. UM-Flint is pioneering new programs such as the Green Chemistry program, which is the first BS of its kind in the nation. The university also offers many other innovative interdisciplinary undergraduate and graduate programs on campus and abroad.



The University of Michigan-Dearborn is an inclusive, student-focused institution. UM-Dearborn is committed to excellence in teaching, learning, research and scholarship, as well as access, affordability and metropolitan impact. Founded in 1959 on just over 200 beautiful acres of the original Henry Ford Estate, UM-Dearborn was forged in a community of working people with the global economy in mind. They offer a transformative education reflective of the University of Michigan acclaim and rooted in an ongoing commitment to transform metropolitan Detroit. Since their inception, UM-Dearborn has set themselves apart in higher education through intentional, meaningful engagement with local industry, government, and non-profits. UM-Dearborn is rich in opportunities for independent and collaborative research, integrated learning, and civic engagement. They are responsive to the changing needs of their diverse student body, the world in which they live and work, ever-advancing technologies, and a knowledge-based global economy.



Oakland University was founded in 1957, when the late Alfred G. and Matilda R. Wilson donated their 1,444-acre estate and \$2 million to Michigan State University for a new college in Oakland County. In 1970, OU became an independent campus and is now a doctoral research institution with a global perspective. Anchored by a strong liberal arts program, the university is organized into the College of Arts and Sciences, School of Business Administration, School of Education and Human Services, School of Engineering and Computer Science, School of Health Sciences, School of Nursing, and Oakland University - William Beaumont School of Medicine. Its faculty members have a distinguished record of research and scholarship, much of which is performed jointly with undergraduate students. OU has an enrollment of over 20,000 students and is located in suburban northeast Oakland County. OU is easily accessible to millions of Detroit metropolitan residents.

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Friday, May 10, 2019
University of Michigan-Flint

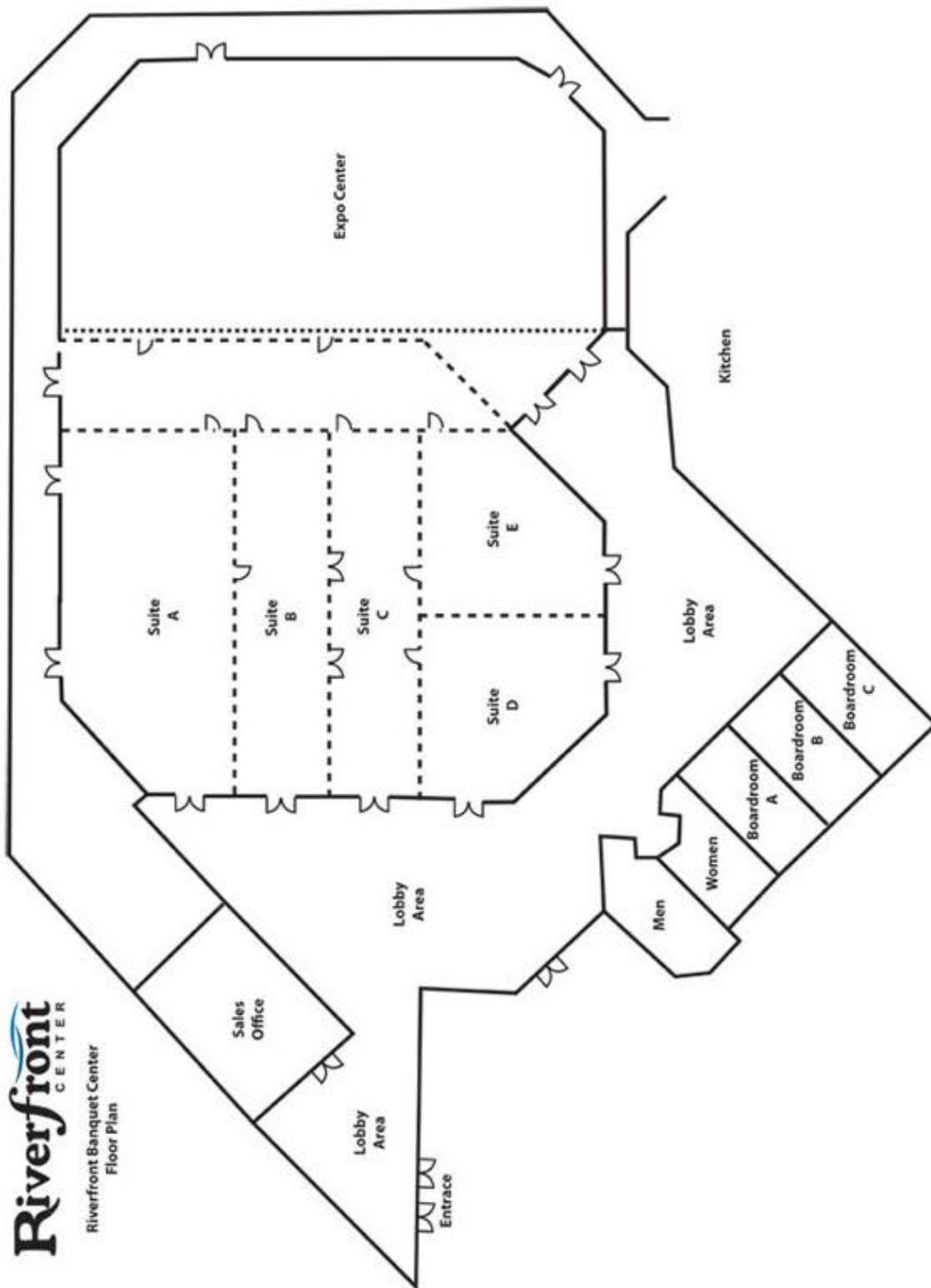
PROGRAM

8:30-9:00 am	Registration and Continental Breakfast	Riverfront Suites
9:00-9:10 am	Welcome <i>Dr. Ken Sylvester, Director, Office of Research & Sponsored Programs</i>	
	Opening Remarks <i>Dr. Susan Alcock, Interim Provost & Vice Chancellor For Academic Affairs</i>	Riverfront Suites
	Announcements	
9:15-10:15 am	Poster Session A	Riverfront Suites
10:30-11:30 am	Oral Session A	Riverfront Classrooms
11:45 am -12:30 pm	Lunch	Riverfront Suites
	Student Perspectives <i>Featuring work from undergraduates: Megan Cate (Dr. Rebecca Tonietto, faculty advisor) Nicodemus Monear (Dr. Besa Xhabija, faculty advisor)</i>	
12:45-1:00 pm	Photo Session	Riverfront Suites
1:15-2:15 pm	Poster Session B	Riverfront Suites
2:30-3:30 pm	Oral Session B	Riverfront Classrooms

The conference concludes immediately after the final session

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Banquet Center Area Floor Map



Meeting of Minds XXVII

Poster Session A 9:15 am – 10:15 am

#3

Title: ASME Hovercraft Design and testing
Author(s): Joseph Wilkinson, Shelat Udit
Faculty sponsor(s): Quamrul Mazumder
Affiliation: Engineering, University of Michigan-Flint

#6

Title: Sexual Explicitness and Substance Use in Billboard Music
Author(s): Grace Bradley, John Marcum, Kristen Ewald, Katherine Smith
Faculty sponsor(s): Pamela McAuslan
Affiliation: Psychology, University of Michigan-Dearborn

#14

Title: Do Children Recognize the Impact of Physical Activities on Weight?
Author(s): Amy Perumalil, Erica Cogswell
Faculty sponsor(s): Lakshmi Raman
Affiliation: Psychology, Oakland University

#15

Title: Pediatric traumatic brain injury (TBI) causes long lasting adult hippocampal neurogenesis impairment
Author(s): Brandon Klein
Faculty sponsor(s): Zhi Zhang
Affiliation: Natural Sciences, University of Michigan-Dearborn

#16

Title: Pediatric traumatic brain injury results in chronic long-lasting microglial activation
Author(s): Samiha Ishrat
Faculty sponsor(s): Zhi Zhang
Affiliation: Natural Sciences, University of Michigan-Dearborn

#18

Title: An Unhappy OaSIS: Attachment Ambivalence is Associated with the Recall of Negative Self And Negative Other Self-Defining Memories.
Author(s): Carlo Tonarelli, Lena Rammouni, Robert Hendricks, Tim Carter
Faculty sponsor(s): Caleb Siefert
Affiliation: Psychology, University of Michigan-Dearborn

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#25

Title: Family Dynamics

Author(s): Olivia Collins

Faculty sponsor(s): Melissa McDonald

Affiliation: Psychology, Oakland University

#26

Title: The Porch Project: Designing Pollinator Friendly Gardens on The Eastside of Flint.

Author(s): Megan Cate

Faculty sponsor(s): Rebecca Tonietto

Affiliation: Biology, University of Michigan-Flint

#27

Title: Do children recognize the impact of physical activities on weight?

Author(s): Karyn Ford

Faculty sponsor(s): Lakshmi Raman

Affiliation: Psychology, Oakland University

#29

Title: Thoughts of Dropping out of High School and Posttraumatic Growth: Examining the Influence of a Negative Neighborhood Environment

Author(s): Taylor Elam, Nicholas Elias

Faculty sponsor(s): Kanako Taku

Affiliation: Psychology, Oakland University

#30

Title: Determining if there is an Association between Socioeconomic Status and Academic Achievement on the Michigan Student Test of Educational Progress (M-STEP) ""

Author(s): Rachel Rebecca

Faculty sponsor(s): Joseph Musial, Cynthia Taraskiewicz (Wayne Regional Educational Service Agencies)

Affiliation: Psychology, University of Michigan-Dearborn

#32

Title: What's So Funny? Interhemispheric Interaction and Discriminatory Humor.

Author(s): Emily Kraniak

Faculty sponsor(s): Jeannette Stein

Affiliation: Psychology, University of Michigan-Flint

#33

Title: How do Immigrant Parent-Child Adaptation Differences Affect Psychological Distress and Personal Growth in Immigrant Youth?

Author(s): Velinka Marton, Brooklin Adams

Faculty sponsor(s): Kanako Taku

Affiliation: Psychology, Oakland University

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#34

Title: Medical Mishaps: Does a Physician's Specialty determine Severity?

Author(s): Brooklin Adams, Nicholas Elias

Faculty sponsor(s): Kanako Taku

Affiliation: Psychology, Oakland University

#35

Title: Varying effects of experience has on the kinds of medical mishaps occurring during a physician's practice

Author(s): Nicholas Elias, Brooklin Adams

Faculty sponsor(s): Kanako Taku

Affiliation: Psychology, Oakland University

#36

Title: Measuring Medication Effectiveness on Tremor in Parkinson's Disease

Author(s): Kate Nitowski, Jordan Juliao, Gregory Fruchey

Faculty sponsor(s): Nathaniel Miller, Na Zhu (Engineering)

Affiliation: Psychology, University of Michigan-Flint

#38

Title: Black Holes Get a Reality Check II: The View from Hubble's Ultraviolet Eyes

Author(s): Lacie Gladding, Hayden Ruff, Alex Bakhsh, Cordell Harris

Faculty sponsor(s): Rajib Ganguly

Affiliation: Physics, University of Michigan-Flint

#46

Title: Baicalein induces cell cycle arrest in breast cancer cells

Author(s): Nicodemus Monear, Shannon De Ruiten, Makayla Watson

Faculty sponsor(s): Besa Xhabija

Affiliation: Chemistry and Biochemistry, University of Michigan-Flint

#72

Title: Preparation of (alkylaminomethylene) indoles and their Corresponding Main Group Complexes

Author(s): Nicholas Wills

Faculty sponsor(s): Nicholas Kingsley

Affiliation: Chemistry and Biochemistry, University of Michigan-Flint

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Oral Session A

10:30 am – 11:30 am

2301 Riverfront: Economic Sociology

#1

Title: Individual Trait Economics: The Role of Human Personality in Wage Determination

Author(s): Brady Malone

Faculty sponsor(s): Bruce Pietrykowski

Affiliation: Economics, University of Michigan-Dearborn

#11

Title: Media Framing of Fast-Food Workers' "Fight for \$15" Strike

Author(s): Elizabeth Cobb, Dean Rumely

Faculty sponsor(s): Harmony Reppond

Affiliation: Behavioral Sciences, University of Michigan-Dearborn

#65

Title: How Capitalism Harms the United States

Author(s): Cherise Pagels

Faculty sponsor(s): Otrude Moyo

Affiliation: Social Work, University of Michigan-Flint

#75

Title: Pay Gap in America

Author(s): Alyssa Juratich

Faculty sponsor(s): Otrude Moyo

Affiliation: Social Work, University of Michigan-Flint

2315 Riverfront: The Politics of Inclusion

#23

Title: Worthy of the Name: Creating a Real Democracy

Author(s): Mark Hooven

Faculty sponsor(s): Alan Epstein

Affiliation: Political Science, Oakland University

#24

Title: Pinkwashing Apartheid: The State of Israel and Queer Bodies as Sites of Development

Author(s): Jordan Yunker

Faculty sponsor(s): Suzanne Bergeron

Affiliation: Women and Gender Studies, University of Michigan-Dearborn

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#57

Title: The Essence of the Hijab: What and Why?

Author(s): Zainab Alnashi

Faculty sponsor(s): Pamela Aronson

Affiliation: Sociology, University of Michigan-Dearborn

#58

Title: Pashtunistan

Author(s): Zarghoona

Faculty sponsor(s): Frank Wayman

Affiliation: Political Science, University of Michigan-Dearborn

2321 Riverfront: Chemistry and Biology

#59

Title: Synthesis of fluorinated 1,5-3H-benzodiazepines from substituted o-phenylenediamines and 2-fluoroalk-3-yn-1-ones

Author(s): Trevor Olson

Faculty sponsor(s): Roman Dembinski

Affiliation: Chemistry, Oakland University

#70

Title: ¹⁹F magnetic resonance probes for activity-based sensing of formaldehyde

Author(s): Kyle Minder

Faculty sponsor(s): Justin Massing

Affiliation: Chemistry and Biochemistry, University of Michigan-Flint

#71

Title: An ¹⁹F magnetic resonance probe for chemoselective detection of hydrogen peroxide

Author(s): Joseph Lange

Faculty sponsor(s): Justin Massing

Affiliation: Chemistry and Biochemistry, University of Michigan-Flint

2325 Riverfront: Critical Issues in Film & Literature

#9

Title: Bananas, Beliefs, and The Being

Author(s): Margaret Schneider

Faculty sponsor(s): Fritz McDonald

Affiliation: Philosophy, Oakland University

#19

Title: Critical analysis of Richard Ritter's 'Black Vase' and Roman 'spherical bottle'

Author(s): Mallory Lloyd

Faculty sponsor(s): Diana Ng

Affiliation: Literature, Philosophy and the Arts, University of Michigan-Dearborn

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#20

Title: The Burden of Representation: How Critical Reception Contains "Love, Simon"

Author(s): Katherine Williams

Faculty sponsor(s): Valerie Palmer-Mehta

Affiliation: Women and Gender Studies, Oakland University

#44

Title: Ideological Awareness in Game of Thrones

Author(s): Jack Norton

Faculty sponsor(s): Kellie Hay, Sharon Howell

Affiliation: Communication, Oakland University

2337 Riverfront: Physics and Natural Sciences

#22

Title: Mechanotransduction in Stretched Engineered Cardiac Tissue: A Mechanical Bidomain Approach

Author(s): Austin Fee

Faculty sponsor(s): Bradley Roth

Affiliation: Physics, Oakland University

#38

Title: Black Holes Get a Reality Check II: The View from Hubble's Ultraviolet Eyes

Author(s): Lacie Gladding, Hayden Ruff, Alex Bakhsh, Cordell Harris

Faculty sponsor(s): Rajib Ganguly

Affiliation: Physics, University of Michigan-Flint

#55

Title: Raman spectroscopy instrumentation for characterizing semiconductor heterostructures

Author(s): Gavin Trevorrow

Faculty sponsor(s): Biplob Barman

Affiliation: Physics, University of Michigan-Flint

#60

Title: Light-echoes as a tool for mass measurement in X-ray binaries

Author(s): Thomas Sutter

Faculty sponsor(s): William Clarkson

Affiliation: Natural Sciences, University of Michigan-Dearborn

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Poster Session B 1:15 pm – 2:15 pm

#2

Title: The effect of lead during the Flint Water Crisis on mouse embryonic stem cells self-renewal and differentiation markers

Author(s): Nicodemus Monear

Faculty sponsor(s): Besa Xhabija

Affiliation: Chemistry and Biochemistry, University of Michigan-Flint

#5

Title: Cross Correlation of Cosmic Ray Spectra in Search of Features

Author(s): Sawyer Hall

Faculty sponsor(s): Ilias Cholis

Affiliation: Physics, Oakland University

#8

Title: Mind Beyond Brain: Towards a Panpsychist Field Theory of Consciousness

Author(s): Youmna Gabr

Faculty sponsor(s): David Skrbina

Affiliation: Philosophy, University of Michigan-Dearborn

#12

Title: Disparities in Access to State Mental Health Care in the United States: 2013-2016

Author(s): Kyle Ralston

Faculty sponsor(s): Jessica Camp

Affiliation: Health and Human Services, University of Michigan-Dearborn

#13

Title: Thermal effects on the structure and magnetic properties of multicomponent nanocrystalline Fe_{26.67}Co_{26.67}Ni_{26.67}Al₁₀Si₁₀ alloy powder

Author(s): Kathem Bazzi

Faculty sponsor(s): Tanjore Jayaraman

Affiliation: Mechanical Engineering, University of Michigan-Dearborn

#28

Title: Synthetic Hormone Dose in Hormonal Contraceptives and Depression

Author(s): Ashley Harris

Faculty sponsor(s): Lisa Welling

Affiliation: Psychology, Oakland University

#39

Title: Preferences of Arab Americans In regards to Romantic Relationships (PAIR)

Author(s): Gharram Mashrah

Faculty sponsor(s): Michelle Leonard, Pamela McAuslan

Affiliation: Psychology, University of Michigan-Dearborn

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#42

Title: Effects of Environmental Factors on Seed Germination of Common-Evening Primrose (*Oenothera biennis*)

Author(s): Hawra Alsafi

Faculty sponsor(s): David Susko

Affiliation: Natural Sciences, University of Michigan-Dearborn

#43

Title: GCMS Analysis of Floral Volatiles in Honey

Author(s): Tristan Calamita

Faculty sponsor(s): Linda Schweitzer

Affiliation: Environmental Science, Oakland University

#47

Title: Monitoring Accretion Behavior in the Black Hole X-Ray Binary V404 Cyg

Author(s): Austin Blevins

Faculty sponsor(s): Will Clarkson

Affiliation: Physics and Astronomy, University of Michigan-Dearborn

#48

Title: Black Holes Get a Reality Check I: Modeling the Dynamic Appetites of Quasars

Author(s): Alex Bakhsh, Cordell Harris

Faculty sponsor(s): Rajib Ganguly

Affiliation: Physics, University of Michigan-Flint

#49

Title: The Feeling of What Happened: Adult Attachment Predicts the Emotional Tone of Self-Defining Interpersonal Memories

Author(s): Sydney Rumley, Brady Malone, Sarah Chamseddine, Megan Huynh, Justin Vu

Faculty sponsor(s): Caleb Siefert

Affiliation: Psychology, University of Michigan-Dearborn

#52

Title: Attitudes on Whether or not National Foreign Spending is too Low by Demographics

Author(s): Nathan Scott

Faculty sponsor(s): Rachel Petrak

Affiliation: School of Management, University of Michigan-Flint

#53

Title: Medicinal Plants in the Bible and Quran

Author(s): Megan Huynh, Aliah Sareini

Faculty sponsor(s): Marilee Benore

Affiliation: Biology & Biochemistry, University of Michigan-Dearborn

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#54

Title: A Gain of Function Paradox: Targeted Therapy for Glioblastoma Associated with Abnormal NHE9 Expression

Author(s): Dhyana Guntur

Faculty sponsor(s): Kalyan Kondapalli

Affiliation: Biology, University of Michigan-Dearborn

#62

Title: Gender and Memory

Author(s): Sabrina Dougherty

Faculty sponsor(s): Peter Molinaro

Affiliation: Psychology, University of Michigan-Flint

#63

Title: Off-Grid Energy System

Author(s): Thomas Brown

Faculty sponsor(s): Quamrul Mazumder

Affiliation: Engineering, University of Michigan-Flint

#64

Title: Water Channel

Author(s): Kyle Willoughby

Faculty sponsor(s): Quamrul Mazumder

Affiliation: Engineering, University of Michigan-Flint

#67

Title: Isolation of High Quality Genomic DNA From Unique Bacteria

Author(s): Joseph Kako

Faculty sponsor(s): Jerry Sanders

Affiliation: Biology, University of Michigan-Flint

#69

Title: Teachers as Community Members

Author(s): Nicole Sebok, Camden Forsberg

Faculty sponsor(s): Laura McLeman, Annie Whitlock (Education)

Affiliation: Mathematics, University of Michigan-Flint

#73

Title: What affects American happiness the most?

Author(s): Hyunggyu Kim

Faculty sponsor(s): Rachel Petrak

Affiliation: School of Management, University of Michigan-Flint

#77

Title: Falls Rates Differ by Diagnosis in Older Adults

Author(s): Tyler Ziccardi

Faculty sponsor(s): Jennifer Blackwood

Affiliation: Physical Therapy, University of Michigan-Flint

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Oral Session B

2:30 pm – 3:30 pm

2301 Riverfront: Business and Social Media

#41

Title: Romance, Self Worth, or Family: Which Do You Choose?

Author(s): Amanda Myers

Faculty sponsor(s): Rebekah Farrugia

Affiliation: Communication and Journalism, Oakland University

#51

Title: Analyzing the Acquisition of Dr. Pepper Snapple Group by Keurig Green Mountain, Inc.

Author(s): Raymond Kusch, Kyle Arrowood, Brant Beck, Peter Millar

Faculty sponsor(s): Sandun Perera

Affiliation: School of Management, University of Michigan-Flint

#76

Title: CityPay: A Mobile App to Facilitate Utility Bills Payment

Author(s): Weston Rutherford, Brandon Abbasspour, Christian Hill, Jarrad LaBelle, Ryan Fulton

Faculty sponsor(s): Charlotte Tang

Affiliation: Computer Science, University of Michigan-Flint

2315 Riverfront: Race and Gender

#7

Title: Eradicating Whiteness, Antiracism and Social Work

Author(s): Angela Bonham

Faculty sponsor(s): Otrude Moyo

Affiliation: Social Work, University of Michigan-Flint

#37

Title: Feminine Ideologies of the 1960's

Author(s): Ashley Averill

Faculty sponsor(s): Kellie Hay

Affiliation: Communication and Journalism, Oakland University

#56

Title: Gender Representation In Professional Wrestling

Author(s): Zachary Sandoval

Faculty sponsor(s): Valerie Palmer-Mehta

Affiliation: Women and Gender Studies, Oakland University

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#61

Title: Whiteness Rewarded in Professional Wrestling

Author(s): Zachary Sandoval

Faculty sponsor(s): Kellie Hay

Affiliation: Communication and Journalism, Oakland University

2321 Riverfront: Using Art to Shape the World

#4

Title: Arts have a positive impact on the incarcerated

Author(s): Jermariana Chandler

Faculty sponsor(s): Beth Freiman, Emma Davis

Affiliation: Theater and Dance, University of Michigan-Flint

#10

Title: Onchi Koshiro, Printmaker

Author(s): Nicholas Pobutsky

Faculty sponsor(s): Susan Erickson

Affiliation: Art History, University of Michigan-Dearborn

#66

Title: Revisionism Repudiated, Reputation Restored: The Art of Narimanbekov and The Book of Dede Korkut

Author(s): Carl Jaeger

Faculty sponsor(s): Claude Baillargeon

Affiliation: Art and Art History, Oakland University

#74

Title: "Courbet's 'Pearly, Pulpy Flesh': The Sexualized Language of Art History"

Author(s): Julia Lypen

Faculty sponsor(s): Claude Baillargeon

Affiliation: Art History, Oakland University

2325 Riverfront: Expressions in Contemporary Art

#31

Title: Embodied Intersections of Disability in Modern and Contemporary Art

Author(s): Gabrielle Schmidt

Faculty sponsor(s): Cynthia Sifonis

Affiliation: Psychology, Oakland University

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#40

Title: Aesthetic Reconciliation in Imagining Space

Author(s): Mark Emmendorfer

Faculty sponsor(s): Jan Furman

Affiliation: English / American Culture, University of Michigan-Flint

#78

Title: White Chapel Memorial: A Secular Cemetery

Author(s): Farkhanda Khalid

Faculty sponsor(s): Ronald Stockton

Affiliation: Political Science, University of Michigan-Dearborn

#79

Title: Wadi As Salam, The world's Largest Cemetery

Author(s): Zeinab Alsheraa

Faculty sponsor(s): Ronald Stockton

Affiliation: Political Science, University of Michigan-Dearborn

2337 Riverfront: Physical and Behavioral Sciences

#21

Title: The Effects of Resveratrol (RES) on Estrogen Receptor Alpha ($ER\alpha$) and Tumor Suppressor Gene (BRCA1) in MCF-7 Breast Cancer Cells

Author(s): Paige Benard

Faculty sponsor(s): Sumi Dinda

Affiliation: School of Health Sciences, Oakland University

#50

Title: Third Molar Development: Providing Functionality or Losing Importance

Author(s): Jade Barreto

Faculty sponsor(s): Anne Danielson-Francois

Affiliation: Biology, University of Michigan-Dearborn

#45

Title: Investigating the Academic Preparedness of First-year Engineering Students

Author(s): Omimah Bazzi

Faculty sponsor(s): DeLean Tolbert

Affiliation: Industrial and Manufacturing Systems Engineering, University of Michigan-Dearborn

#68

Title: Sharks in captivity: Utilizing habitat use and behavior as an assessment of animal welfare

Author(s): Alexis Hart

Faculty sponsor(s): Sandra Troxell-Smith

Affiliation: Biological Sciences, Oakland University

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ABSTRACTS

#1

Title: Individual Trait Economics: The Role of Human Personality in Wage Determination

Author(s): Brady Malone

Faculty sponsor(s): Bruce Pietrykowski

Affiliation: Economics, University of Michigan-Dearborn

Abstract: This paper serves as further evidence for the existence, predictive power, and general importance of Individual Trait Economics (ITE). ITE is the new name generated for the mixture of personality psychology and labor economics. This examination of ITE will focus on wage determination using new data from the DNB Household Survey (DHS). A pseudo-meta-analysis on the most recent papers in the ITE literature is conducted to further support the prevalence of ITE. The findings of this paper generally corroborate those of its predecessors with a few minor, yet intriguing, differences. For instance, Openness to Experience was found to have a very impactful and significant effect on wages roughly on par with or greater than that of the traditional wage predictors of education, tenure, and experience. This, as well as other interesting findings are discussed in detail further into the paper. This paper also provides a comprehensive review of the wage determination literature generally speaking with special attention given to the impact of personality traits and so called "wage discrimination".

#2

Title: The effect of lead during the Flint Water Crisis on mouse embryonic stem cells self-renewal and differentiation markers

Author(s): Nicodemus Monear

Faculty sponsor(s): Besa Xhabija

Affiliation: Chemistry and Biochemistry, University of Michigan-Flint

Abstract: Plumbium (Pb), commonly known as lead, is one of the most abundant metals in the earth's crust. The abundance of lead, coupled with its desirable physical and chemical properties, has resulted in extensive use for industrial applications such as battery fabrication and, also, as an additive in gasoline, paint and ceramics. Recent events have brought lead into the media spotlight, as its longstanding identification as a biological health hazard has been supplemented with evidence that components of infrastructure that contain lead risk contaminating the surrounding ecosystems and, ultimately, food/water sources.

In Flint, Michigan, April 2014 marked the beginning of a period that would come to be known as the Flint water crisis. Following a change in the water supply (from Lake Huron to the Flint River), lead began to leach from water pipes, which was found to be the result of insufficient water treatment methods for a more corrosive water source. This resulted in a stark increase in the population percentage with elevated blood lead levels. The threshold for blood lead levels considered to be safe has been defined as 5 $\mu\text{g}/\text{dL}$ by the Center for Disease Control and Prevention (CDC). The percentage of the Flint population exceeding this threshold increased from 4% to 50% following the change in water supply, with some individuals testing as high as 40 $\mu\text{g}/\text{dL}$.

As the effect of lead on embryonic stem cell development has not been fully elucidated, our goal was to assess the effect of lead on early embryonic development at lead concentrations mimicking those experienced by Flint residents.

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#3

Title: ASME Hovercraft Design and testing

Author(s): Joseph Wilkinson, Shelat Udit

Faculty sponsor(s): Quamrul Mazumder

Affiliation: Engineering, University of Michigan-Flint

Abstract: The motivation that we had to work on this design project was to be able to compete in the ASME "I Am 3D" Design Competition that will be commencing in Michigan in the month of April. Furthermore, this project gives the group the ability to apply concepts and theories that we have learned in previous classes in practical application. For the competition, the main objective is to design and manufacture a hovercraft-using additive manufacturing that will pick "" up, carry and will deliver a payload after going through a course. The payload for the competition is a 3D printed two-inch cube.

#4

Title: Arts have a positive impact on the incarcerated

Author(s): Jermariana Chandler

Faculty sponsor(s): Beth Freiman, Emma Davis

Affiliation: Theater and Dance, University of Michigan-Flint

Abstract: It seems that underprivileged communities doesn't always get the artistic opportunities, such as going into a traditional dance studio and taking dance lessons. Why? Because parents in these communities aren't aware of the opportunities and/or lack of money. Situations like these can lead to high rates of both men and women incarcerated. Since these incarcerated individuals didn't get the chance to go to an artistic opportunity, I believe bringing that artistic opportunity to them will serve a higher purpose than them learning how to draw or write a poem. I think it's safe to say underprivileged communities are often forgotten about, and incarcerated individuals are even more forgotten about. But this doesn't mean that they don't deserve a chance at learning valuable lessons through exploring art. Human's imaginations can be a dangerous tool, though helpful. For those incarcerated, individuals spend hours using that imagination, picturing them being happy with family and doing whatever they need to get back on the right track. Well, a thought is one thing, but to be able to express that thought is another. These individuals should be able to put their thoughts on poster; not just lined notebook paper, on their bodies; not in a sense of tattoo body art, but in a sense of dance expression. To allow individuals to fall back into society, without feeling like the odd one out, it's going to take a lot. Exploring art can be the first step of this long journey.

#5

Title: Cross Correlation of Cosmic Ray Spectra in Search of Features

Author(s): Sawyer Hall

Faculty sponsor(s): Ilias Cholis

Affiliation: Physics, Oakland University

Abstract: Pulsars which are rapidly rotating neutron stars are natural sources of high energy cosmic-ray electrons and positrons injected into the interstellar medium. At a rate of one new pulsar per century for the entire Milky Way, only a few dozen pulsars can be responsible for the cosmic-ray positron fluxes above 500 GeV. The same sources will contribute also to the high energy cosmic-ray electrons spectra. The discreteness of the source population can result in small spectral features (bumps and wiggles) in the electron and positron energy spectra. By performing a cross-correlation analysis of the cosmic-ray

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electrons and the cosmic-ray positrons spectra we can search for such spectral features that would coincide in energy on both measured spectra. By finding a positive signal for correlated features in these spectra we can test the properties of pulsars in the Milky Way.

#6

Title: Sexual Explicitness and Substance Use in Billboard Music

Author(s): Grace Bradley, John Marcum, Kristen Ewald, Katherine Smith

Faculty sponsor(s): Pamela McAuslan

Affiliation: Psychology, University of Michigan-Dearborn

Abstract: The present study analyzed popular music from 1980 to 2017 for mentions of substances, and sexually explicit lyrics to consider changes in overall prevalence and tendency for songs to include multiple themes. The sample consisted of the top 10 songs from Billboard Hot 100 end of year charts (N=377). Lyrics were obtained, six coders (at least two per song) read the lyrics, listened to the song, then coded for the presence or absence, as well as number of mentions (0-3) of alcohol, drugs, and sexualization. We expected to find that prevalence of all three to have increased, to be more common in music by male, non-white artists in the rap, R&B/hip-hop and rock genres, and that multiple themes will be increasingly common in recent years. Descriptive statistics regarding characteristics of artists and changes over decades will be provided (e.g., recent decades have seen a shift in both the ethnicity and gender of popular artists; pop, R&B/hip-hop, and rap make up the majority of songs on the end of year charts. The most popular music in recent years is significantly more likely to contain mentions of alcohol, drugs, and sexuality and recent music is significantly more likely to contain multiple themes.

#7

Title: Eradicating Whiteness, Antiracism and Social Work

Author(s): Angela Bonham

Faculty sponsor(s): Otrude Moyo

Affiliation: Social Work, University of Michigan-Flint

Abstract: My presentation will showcase findings from my work on an independent study project titled: "Eradicating Whiteness, anti-racism, and Social Work". The presentation highlights the current concerns, what I learned from guided readings, this year's White Privilege Conference, and community events that focus on racial diversity. The presentation will focus on what it means to move through the world as an anti-racist social work pre-professional and a white individual. This presentation will take a deep and critical look at the impact of Whiteness as a system has on the social work profession at the micro and macro level, including how whiteness impacts and impedes policies, clients, and social change. This presentation will include ways to combat privilege blindness, bringing attention to and tools for eradicating microaggressions, and convey how one can walk as an anti-racism advocate.

#8

Title: Mind Beyond Brain: Towards a Panpsychist Field Theory of Consciousness

Author(s): Youmna Gabr

Faculty sponsor(s): David Skrbina

Affiliation: Philosophy, University of Michigan-Dearborn

Abstract: From the earliest investigations of cosmology, man's most fundamental inquiry has been to question the nature of his conscious existence in the physical world. Throughout antiquity, cultures have attempted to apprehend the metaphysical nature of consciousness by constructing phenomenal

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theories of mind, soul, and brain. Beginning with the Greek conception of animism in the third millennium, various notions of consciousness have evolved in response to ongoing conceptual and scientific developments across the world. Since then, modern scientific thought has grown to accept a reductionist, physicalist perception of consciousness which defines the mind as purely material. While these scientific traditions have popularized the belief that some elements of the universe lack consciousness, several empirical and ontological evidences point to a more panpsychic nature of reality: one in which consciousness extends infinitely into everything. In attempt to apprehend a more philosophically sound conception of consciousness, this essay investigates several such evidences, exploring ontological and epistemological questions central to philosophy of mind.

#9

Title: Bananas, Beliefs, and The Being

Author(s): Margaret Schneider

Faculty sponsor(s): Fritz McDonald

Affiliation: Philosophy, Oakland University

Abstract: Is the claim that "God's existence is unknowable" a valid premise for a religious belief? This paper seeks to argue that "determined agnostheism", a specific version of agnosticism that claims the existence of God unknowable, is an inadequate assertion. "Determined agnostheism" is a logically conceivable proposition that many individuals assert as a religious belief, yet, due to its claim that knowledge on God's existence is ultimately unfathomable, its originating premise eliminates it from religious discussions. Previous philosophers of religion such as Richard Dawkins have expressed dissatisfaction with the "wishy-washy" tendencies of agnosticism, but none have gone as far as to prove its argument as incoherent. In order to accomplish this goal, an analytic approach that focuses on an explicit use of definitions, premises, and conclusion is implemented. The paper defines basic terms such as belief, doubt, and religion. Next, agnosticism is explicitly defined, introducing the new term "determined agnostheism". This version of agnosticism is evaluated using the process of logical deduction, implementing modus tollens. Lastly, the use of the label of "agnostic" - as a cogent religious belief is debunked. Invalidating the premise for "determined agnostheism" - will allow individuals and philosophers to hold dialogue regarding the religious belief on God's existence.

#10

Title: Onchi Koshiro, Printmaker

Author(s): Nicholas Pobutsky

Faculty sponsor(s): Susan Erickson

Affiliation: Art History, University of Michigan-Dearborn

Abstract: Onchi Koshiro (1891-1955), "father" of the expressive Sosaku Hanga printmaking movement in Japan, completed a work in 1946 titled 'Impression of a Violinist' depicting musician Suwa Nejiko (1920-1012). This example of Koshiro's creative works is now part of the University of Michigan's Museum of Art's collection of Japanese woodblock prints (accession number 1997/2.14). The print displays the involvement of its creator in all stages of its execution and communicates a sense of melancholy by the artist and his subject in relation to their country's devastated national identity following the nuclear bombings on Nagasaki and Hiroshima in 1945. These aspects demonstrate both Sosaku Hanga's openness toward western printmaking techniques as well Japan's helpless succumbment to U.S. occupation following the end of World War II. As research has revealed, Koshiro's atmospheric and emotionally-weighted print depicts Nejiko performing for such occupational forces.

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#11

Title: Media Framing of Fast-Food Workers' "Fight for \$15" Strike

Author(s): Elizabeth Cobb, Dean Rumely

Faculty sponsor(s): Harmony Reppond

Affiliation: Behavioral Sciences, University of Michigan-Dearborn

Abstract: Fast-food and other minimum wage earning workers face a difficult dilemma as their work is both economically undervalued and yet essential. There is a long history of portraying low-status and minimum wage workers in stereotyped and dehumanized ways (Volpato, Andrighetto, & Baldissarri, 2017). Of interest is how low-status, minimum wage workers are framed in newspapers when they are demanding to earn a living wage. Fast-food workers in the United States engaged in nation-wide, non-unionized strikes called "Fight for 15." To examine how fast-food workers, the minimum wage, and related labor strikes were framed in mainstream newspapers, we examined articles (N = 63) published between 2012 and 2016 in national and local newspapers (n = 8). Two research assistants independently coded each article. Overall, workers were portrayed as sympathetic (N = 30) and low wages as harmful to workers' well-being (n = 46), yet the majority of articles also framed workers, the minimum wage, and the strikes as episodic (n = 54). These episodic frames tended to focus on one sympathetic worker and their personal experience of not being able to make ends meet rather than providing a broader structural analysis. We discuss the social psychological and policy implications of our findings.

#12

Title: Disparities in Access to State Mental Health Care in the United States: 2013-2016

Author(s): Kyle Ralston

Faculty sponsor(s): Jessica Camp

Affiliation: Health and Human Services, University of Michigan-Dearborn

Abstract: My study will examine disparities in access to state mental health care by diagnosis, race, age and gender for adults with mental health conditions from 2013-2016. This study is a quantitative examination of secondary data from the Mental Health Client-Level Data between the years of 2013-2016. Data will include a total of 22,203,760 cases.

My hypothesis are as follows:

- H01: There is no relationship between mental health diagnosis and access to state mental health care among adults with mental health conditions.
- H11: There is a relationship between mental health diagnosis and access to state mental health care among adults with mental health conditions
- H02: There is no relationship between race and access to state mental health care among adults with mental health conditions
- H12: There is a relationship between race and access to state mental health care among adults with mental health conditions
- H03: There is no relationship between gender and access to state mental health care among adults with mental health conditions.
- H13: There is a relationship between gender and access to state mental health care among adults with mental health conditions

This project is part of my Quantitative Research class and will be completed before the conference.

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#13

Title: Thermal effects on the structure and magnetic properties of multicomponent nanocrystalline Fe_{26.67}Co_{26.67}Ni_{26.67}Al₁₀Si₁₀ alloy powder

Author(s): Kathem Bazzi

Faculty sponsor(s): Tanjore Jayaraman

Affiliation: Mechanical Engineering, University of Michigan-Dearborn

Abstract: The multicomponent nanocrystalline Fe_{26.67}Co_{26.67}Ni_{26.67}Al₁₀Si₁₀ alloy powder was synthesized by mechanical alloying in a high-energy ball mill. The structural characterization, scanning electron microscopy and x-ray diffraction, revealed that the mean particle size was ~3 microns and the average grain size was less than ~10 nanometers, respectively. The pristine alloy powder at ambient temperature was comprised of a single-phase, a face-center-cubic (f.c.c.) solid-solution, whose lattice-parameter was estimated as ~0.3591 nm. At elevated temperatures, the alloy powder dissociated into two phases—an iron-rich body-centered-cubic (b.c.c.) phase and a nickel-rich f.c.c. phase. The thermally-treated powder retained the two-phase structure at ambient temperature. The intrinsic coercivity (HC) and saturation magnetization (MS) of the pristine alloy powder was estimated as ~5 kA/m and ~90 Am²/kg, respectively. The HC witnessed hardly any noticeable change at sub-ambient temperatures. At elevated temperatures, HC initially decreased followed by an increase. On the other hand, at sub-ambient temperatures, the MS gradually increased, and at elevated temperatures, the MS initially decreased and then increased. The soft magnetic properties of the thermally treated powder maintained near-constant values up to ~800 K. The magnetic properties of the nanocrystalline alloy was compared with other multicomponent alloys, available in the literature. The multicomponent nanocrystalline alloy has relatively superior soft-magnetic properties at ambient, sub-ambient, and elevated temperatures and appears to be a promising multicomponent alloy for a variety of soft-magnetic applications.

#14

Title: Do Children Recognize the Impact of Physical Activities on Weight?

Author(s): Amy Perumalil, Erica Cogswell

Faculty sponsor(s): Lakshmi Raman

Affiliation: Psychology, Oakland University

Abstract: Obesity has become an epidemic in the United States. The National Institutes of Health (2017) stated that around 1 in 6 children and adolescents between the ages of 2 and 19 were classified as obese. In light of this obesity epidemic, it is important to decipher what factors children and adults think are responsible for this trend. Most of the previous research in this area has assessed children's recognition of the impact of nutrition on growth. However, another important factor in the determination of weight is physical activities that one participates in. The following study assesses this question by studying if children recognized the impact of physical activities on weight. Twenty-six adult participants and twenty-four child participants (range = 4-5 years) were shown caricatures of thin and fat boys and girls along with a set of activities that were physically active (swimming) or sedentary in nature (reading). Participants were then asked to pick the activities that they thought each of the characters participated in. Participants verbally reported their answers which the experimenter noted down verbatim. Preliminary results indicate that adult participants understand the relationship between body size and types of activities (M = 5.38 for thin body size, M = 7.0 for fat body size). Unfortunately, child participants were not able to understand the relationship between body size and types of activities

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($p > .001$). This suggests the need for preschool programs to focus on integrating this knowledge into their curriculum.

#15

Title: Pediatric traumatic brain injury (TBI) causes long lasting adult hippocampal neurogenesis impairment

Author(s): Brandon Klein

Faculty sponsor(s): Zhi Zhang

Affiliation: Natural Sciences, University of Michigan-Dearborn

Abstract: Young children who have sustained severe TBI can suffer from debilitating neurocognitive deficits. Impairment of adult hippocampal neurogenesis is associated with cognitive deficits and depression. Very few studies have investigated adult hippocampal neurogenesis after pediatric TBI. Here we evaluated the long-term impact of pediatric TBI on adult hippocampal neurogenesis. In this model, animals in the control group underwent controlled cortical impact injury on 5-7 days of age and were euthanized at 3 months of age, alongside naïve and sham (craniotomy alone) groups. The brain slices from the naïve, sham and TBI groups were immunohistochemically processed with BrdU (the marker of new-born cells) and NeuN (the neuronal marker). We performed unbiased stereology cell counting and cell co-localization analysis. We found that 1) the survival rate of adult-born neurons at both the ipsilateral and contralateral hippocampus significantly decreased in TBI kits at 3 months post-injury. 2) TBI induced aberrant migration of the adult-born neurons at 3 months of age. In conclusion, pediatric TBI causes prolonged dysregulation of adult hippocampal neurogenesis through young adulthood. Therefore protection of adult hippocampal neurogenesis at the chronic phase of injury may potentially improve outcomes and functionality.

#16

Title: Pediatric traumatic brain injury results in chronic long-lasting microglial activation

Author(s): Samiha Ishrat

Faculty sponsor(s): Zhi Zhang

Affiliation: Natural Sciences, University of Michigan-Dearborn

Abstract: Although traumatic brain injury (TBI) is prominent among all age groups, children younger than 4 years of age have a higher risk of TBI. Young children with sustained TBI usually suffer from adverse physical, behavioral, psychosocial and cognitive problems that often persist into adulthood. Despite the prevalence of TBI among young children, the underlying mechanisms of this epidemic are not fully understood. Excessive microglia activation after TBI can result in extensive cell death and tissue loss. The objective of this study is to investigate microglial activation patterns in the chronic phase after pediatric TBI. Animals in the TBI group underwent controlled cortical impact injury on 5-7 days of age and euthanized at 3 months of age, along with naïve and sham (craniotomy alone) groups. The brain slices from the naïve, sham and TBI groups were immunohistochemically processed with microglia marker IBA1. After performing unbiased microglial cell tracing and statistical analyses, we found that the total length of the process of microglia at the ipsilateral side of injury significantly decreased, whereas, the total length of the process of microglia at the contralateral side of injury increased in the TBI group, compared with naïve and sham groups. These morphological changes may indicate an abnormal activation of microglia. In conclusion, pediatric TBI caused long-lasting microglial cell activation that persists well into puberty.

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#18

Title: An Unhappy OaSIS: Attachment Ambivalence is Associated with the Recall of Negative Self And Negative Other Self-Defining Memories.

Author(s): Carlo Tonarelli, Lena Rammouni, Robert Hendricks, Tim Carter

Faculty sponsor(s): Caleb Siefert

Affiliation: Psychology, University of Michigan-Dearborn

Abstract: Adult attachment theory proposes that some individuals have an emotional desire for close relationships, but avoid them behaviorally due to fears that close relationships will be harmful. This is termed, attachment ambivalence. The purpose of the present study is to examine associations between attachment ambivalence and interpersonal self-defining memories (ISDMs). A total of 60 (50% men; 46.7% women, and 3.3% non-binary) undergraduates participated in this IRB approved study. With regard to race, 5% identified as African-American, 28.3% identified as Middle-Eastern, 8.3% identified as Asian, 5% identified as Hispanic, 50% identified as Caucasian, and % identified as other. Participation involved reporting three ISDMs, rating each ISDM for the content of the memory affected the individual's view of others and themselves, and finally completing self-report measures of adult attachment. Attachment ambivalence was associated with recalling more memories containing events that led the participant to view others more negative ($r = .51, p < .05$) and themselves more negatively ($r = .44, p < .05$). Results are discussed in terms of recent social-cognitive models on adult attachment and linked to prior work that has found associations between fearful avoidance and poor outcomes. Limitations of the study are noted, and future directions are discussed.

#19

Title: Critical analysis of Richard Ritter's 'Black Vase' and Roman 'spherical bottle'

Author(s): Mallory Lloyd

Faculty sponsor(s): Diana Ng

Affiliation: Literature, Philosophy and the Arts, University of Michigan-Dearborn

Abstract: Glass bottles were used for oils, makeup, medicine, and various products. The Roman spherical bottle's blue-green glass fabric may have protected its valuable contents from light exposure. With Richard Ritter's Black Vase, function was not the most important factor. Instead, it is a vehicle for creative expression and aesthetic contemplation. Richard Ritter's work has been featured in several exhibitions in University of Michigan-Dearborn galleries in the past. Publications on this artist and his works can be found on the fourth floor [NK5198] of the Mardigian Library.

#20

Title: The Burden of Representation: How Critical Reception Contains "Love, Simon"

Author(s): Katherine Williams

Faculty sponsor(s): Valerie Palmer-Mehta

Affiliation: Women and Gender Studies, Oakland University

Abstract: In this paper, I investigate the relationship between the 2018 film Love, Simon and critical reception of the film in an effort to expand understandings of how public perceptions surrounding LGBTQ+ media are shaped. Critical responses to the film operate as paratexts influencing audiences and contributing to discourses surrounding the film's content. In order to understand the ideological and meaning making power of reviews, I analyzed 20 film reviews of Love, Simon from U.S. trade publications. Using queer theory and a combination of conventional and directed qualitative content analysis, I found three major themes in how critics write about the film. First, the reviews minimize the

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complexities of homophobia through concepts of privilege, outing, and isolation. The data also shows that these critics often promote assimilationist politics" discursively upholding the construct of "normalcy" and reinforcing discourses of progress regarding LGBTQ+ rights. Finally, the reviews place a heavy burden of representation on the film by articulating standards of expression of sexual identity, themes of darkness and lightheartedness, and amounts of sexual content. This project finds that reviews contain the meanings and interpretations of this film, an impact that is particularly significant when the content focuses on visibility for marginalized groups.

#21

Title: The Effects of Resveratrol (RES) on Estrogen Receptor Alpha (ER α) and Tumor Suppressor Gene (BRCA1) in MCF-7 Breast Cancer Cells

Author(s): Paige Benard

Faculty sponsor(s): Sumi Dinda

Affiliation: School of Health Sciences, Oakland University

Abstract: Resveratrol (RES) is a compound with antioxidant and anti-inflammatory properties found in grapes, blueberries, peanuts, and raspberries. In previous studies, RES is shown to have anti-tumorigenic properties. A previous study from our laboratory shows that increasing RES concentration in breast cancer cell line T47-D decreases the number of breast cancer cells present compared to the control. Specifically, the results of this study aim to further understand the relationship between RES and tumor suppressor proteins in MCF-7 breast cancer cells by analyzing the effects on the expression of estrogen receptor-alpha (ER α) and breast cancer type 1 susceptibility gene (BRCA1). These observed effects will demonstrate if RES enables or inhibits the functioning of tumor suppressor proteins. Our results will help further understand the possible role of RES as a preventative measure against breast cancer across different cell lines.

#22

Title: Mechanotransduction in Stretched Engineered Cardiac Tissue: A Mechanical Bidomain Approach

Author(s): Austin Fee

Faculty sponsor(s): Bradley Roth

Affiliation: Physics, Oakland University

Abstract: It has been observed in experiments that when a sheet of cardiac tissue is stretched, cells differentiate favorably on the free edge compared to the interior. A previous analysis has described this behavior using the mechanical bidomain model. This model is a mathematical representation that predicts where mechanotransduction occurs by looking at where forces, acting on integrin proteins, caused by differences in displacements between the intra- and extracellular matrices, are largest. The earlier analysis, however, only considered the mechanical bidomain model using plane strain, which assumes zero displacement in the z-direction. This analysis considers a sheet of tissue being stretched under plane stress, which assumes zero stress in the z-direction, but allows for perpendicular tissue displacements. The mechanical bidomain model is solved numerically using finite differences. This analysis compares the results of the mechanical bidomain model on a stretched sheet of cardiac tissue found by plane strain and plane stress. The plane strain model predicted differentiation on the tissue's free edge, similar to previous experiments, whereas plane stress did not predict any differentiation on the free edge. Therefore, plane strain seems to be the better model in predicting where cell differentiation occurs in relation to the examined experiment.

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#23

Title: Worthy of the Name: Creating a Real Democracy

Author(s): Mark Hooven

Faculty sponsor(s): Alan Epstein

Affiliation: Political Science, Oakland University

Abstract: Our government is failing its people. It is unresponsive to change and unresponsive to the needs of those over whom it governs. There is a common adage in our political discourse that we are the greatest democracy in the world, but I contest this, not because there are other countries with democracies better than ours, but because we are not a democracy to begin with. Disconnect between the will of the people and the will of the people's politicians best exemplifies this and is a result of corruption and the infestation of money in our political process. Only through implementing a democratic government worthy of the name democracy can we fix this issue. For centuries philosophers have said that democracy is unstable, but this sentiment is incorrect and any problems democracy has are exacerbated, not eradicated, by our current model of government: republicanism. Participatory deliberation combines deliberative democracy, where representative samples of the population advise politicians on policy, with direct democracy, where the people themselves make policy decisions. Participatory deliberation can fix the issues of our society if partnered with a restructured education system that instills critical thinking skills and open-mindedness in our population.

#24

Title: Pinkwashing Apartheid: The State of Israel and Queer Bodies as Sites of Development

Author(s): Jordan Yunker

Faculty sponsor(s): Suzanne Bergeron

Affiliation: Women and Gender Studies, University of Michigan-Dearborn

Abstract: This presentation will explore how Israel attempts to improve its global image as well as further the development of the State through American gay tourism. Using the homonationalist framework proposed by Jasbir Puar, it will provide an analysis of power dynamics exerted upon individuals within Israel/Palestine and how Israeli public relations campaigns aim to reify the nation-state through narratives of modernity, progress, democracy, and human rights. This work assesses the position of American, Palestinian, and Israeli queers in relation to the discourse of rights and freedom in Israel/Palestine and seeks to go beyond the headlines and onto the ground, examining how this discourse effects and impacts the lives of Palestinian queers under occupation.

#25

Title: Family Dynamics

Author(s): Olivia Collins

Faculty sponsor(s): Melissa McDonald

Affiliation: Psychology, Oakland University

Abstract: This study explored the relationship between birth order and academic success. Specifically, the focus was on how parenting practices may influence first-born children to have greater academic success than later-born children. According to past research, parents tend to have higher expectations and deliver more intense criticism regarding homework to their first-born children. However, the emotional tone parents set also affect academic success" such that a positive tone tends to result in higher academic success. Positive involvement consists of praise and helping with school related activities, whereas negative involvement is pressure via commands and punishments. Although current

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research suggests that first-borns receive more pressure, first-borns also show more academic success, which suggests that they may receive more positive support as well. Therefore, this study aimed to explore the variables of parental pressure and support and how they differ for children based on birth order, and how they relate to academic success. Preliminary results showed a significant negative relationship between later-born children and controlling parenting practices. Additionally, data showed that controlling parental practices are negatively correlated with academic success, whereas supportive practices are positively correlated with academic success.

#26

Title: The Porch Project: Designing Pollinator Friendly Gardens on The Eastside of Flint.

Author(s): Megan Cate

Faculty sponsor(s): Rebecca Tonietto

Affiliation: Biology, University of Michigan-Flint

Abstract: Research Question: What garden type are pollinators most attracted to and does the light condition make a difference in their choices? Twenty houses on the eastside of Flint MI were chosen and had new porches as well as pollinator friendly gardens made. Observations of bee landings were taken and counted over a three month time span.

#27

Title: Do children recognize the impact of physical activities on weight?

Author(s): Karyn Ford

Faculty sponsor(s): Lakshmi Raman

Affiliation: Psychology, Oakland University

Abstract: The majority of research on children's understanding of weight has focused on the link between nutrition and weight. While nutrition plays an important part in the determination of obesity, another important but often neglected factor is physical activities. This three part study investigated children's and adults' recognition of the impact of physical activities and body size. We were specifically examining if children recognize the impact of active and sedentary activities and the connection they make to perceived physical fitness. Part 1 consisted of testing child and adult participants on their knowledge of active and sedentary activities. Part 2 consisted of training children either using an associative or causal reasoning link. Part 3 consisted of testing the children on the impact of activities on weight. Preliminary results indicate that children make a differentiation between the impact of physical and sedentary activities on weight.

#28

Title: Synthetic Hormone Dose in Hormonal Contraceptives and Depression

Author(s): Ashley Harris

Faculty sponsor(s): Lisa Welling

Affiliation: Psychology, Oakland University

Abstract: Some women report positive mood changes with the use of hormonal contraceptives, whereas others discontinue hormonal contraceptive use due to negative psychological side effects. Although synthetic estrogen and progesterone are associated with changes in mood, the relationship between dose of synthetic hormones in hormonal contraceptives and depression has received little attention in the literature. This study explores the role of synthetic hormone dose in hormonal contraceptives on depression inventory scores in young women. Nearly two hundred women aged 18 to 35 years

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completed an online survey containing questions about contraceptive use, menstrual distress, and symptoms of depression using the Beck Depression Inventory II. Hormonal contraceptive users were predicted to have an increased Beck Depression Inventory II score compared to non-users. Hormonally contracepted participants were also separated into high versus low doses of synthetic progesterone and high versus low doses of synthetic estrogen to examine the influence of these hormones on Beck Depression Inventory II scores. However, there were no significant differences between users versus non-users in reported depression, nor did reported depression differ significantly as a function of synthetic hormone dose. Instead, premenstrual distress was shown to be correlated with reported depression in both users and non-users.

#29

Title: Thoughts of Dropping out of High School and Posttraumatic Growth: Examining the Influence of a Negative Neighborhood Environment

Author(s): Taylor Elam, Nicholas Elias

Faculty sponsor(s): Kanako Taku

Affiliation: Psychology, Oakland University

Abstract: Various sociocultural elements can influence adolescent academic achievement, such as where they live and socioeconomic status (LeCroy & Krysik, 2008). Environments with negative influences can lead to low academic achievement and thoughts of dropping out of school, which could have poor consequences on adolescents (Gutman & Midgley, 2000) or can lead to personal growth (Larson, 2000). It was hypothesized that students with negative neighborhood characteristics will be more likely to have thoughts of dropping out and report high levels of posttraumatic growth (PTG). High school students ($n=63$, $Mage=16.44$) completed a survey indicating their neighborhood characteristics ($\alpha=.85$, modified perceived neighborhood disorder scale from Frank et. al., 2009) whether they have had thoughts of dropping out, and the PTG Inventory-Short Form (score-range:0.00-5.00; Cann et al., 2009; $\alpha=.89$). Two bivariate correlation tests indicated no significant relationship between negative neighborhood characteristics and thoughts of dropping out ($r=-.14$, $p=.27$) and no significant relationship between negative neighborhood characteristics and PTG ($r=.065$, $p=.61$). Results suggest that negative neighborhood characteristics may not affect academic achievement or PTG, possibly because stress can influence thoughts of dropping out, regardless of neighborhood characteristics. Future research should focus on whether school belonging has an effect on thoughts of dropping out and PTG.

#30

Title: Determining if there is an Association between Socioeconomic Status and Academic Achievement on the Michigan Student Test of Educational Progress (M-STEP) ""

Author(s): Rachel Rebecca

Faculty sponsor(s): Joseph Musial, Cynthia Taraskiewicz (Wayne Regional Educational Service Agencies)

Affiliation: Psychology, University of Michigan-Dearborn

Abstract: Academic proficiency in English Language Arts (ELA) and mathematics is measured by the Michigan Student Test of Educational Progress (M-STEP) in grades 3-8, and redesigned SAT in grade 11. The M-STEP has been in place since 2014 and the SAT since 2016. Recent changes by the Michigan Legislature have resulted in the new third grade reading law. Specifically, students who are not proficient in grade 3 reading may be retained during the next academic year. There are no provisions, however, that acknowledge, address, or control for, the impact of poverty on academic performance. Methods: A secondary analysis of anonymous Wayne County M-STEP ELA and Math results were abstracted from the Michigan Department of Education's public available data files and the

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MISchoolData portal for grades 3-8, and 11. These scores were compared with the percent of Economically Disadvantaged (ED) children. Correlations and linear regression were performed in order to determine if there was a linear association between these continuous data points.

Results: According to the data, there was a strong negative association between math proficiency and ED ($r = -.878$) and ELA proficiency and ED ($r = -.879$), respectively. These results were statistically significant at $\alpha < 0.05$.

Discussion: These preliminary results suggest a strong negative association between poverty and academic achievement. Continued data mining could provide additional analytic support that could assist the Michigan legislature develop sound public policy that could address and counter K-12 poverty.

#31

Title: Embodied Intersections of Disability in Modern and Contemporary Art

Author(s): Gabrielle Schmidt

Faculty sponsor(s): Cynthia Sifonis

Affiliation: Psychology, Oakland University

Abstract: Embodiment exists on a continuum, and is influenced not only by the physical world but also by cultural norms that determine acceptable ways to have a body. Non-normative embodiments (bodies resisting and rejecting how bodies "should" be) manifest in different experiences of embodiment due to policing by cultural norms. This paper discusses physical disability and how disability intersects with gender and sexuality within modern and contemporary art. This thesis investigates how embodiment has been documented by psychologists. It utilizes the Developmental Theory of Embodiment and a deconstructive method to apply psychological insights to several examples from modern and contemporary art. Artists such as Frida Kahlo, Mike Parr, and Carmen Papalia have explored the body and disability and offer challenging views of disability in their work. The gap between empirical and theoretical theories of embodiment and the influence of art is bridged through the creation of an art notebook, which is an integration of the psychological literature and artist research through writings and response artworks. This research emphasizes the necessity of recognizing intersections of embodiment on two levels: a disciplinary level and an identity level. Future research can investigate other embodied intersections with disability, such as race and age.

#32

Title: What's So Funny? Interhemispheric Interaction and Discriminatory Humor.

Author(s): Emily Kraniak

Faculty sponsor(s): Jeannette Stein

Affiliation: Psychology, University of Michigan-Flint

Abstract: Christman and colleagues argue that handedness may be reflective of interhemispheric interaction (IHI) which is the degree to which the hemispheres of the brain communicate. Those with increased IHI have greater access to right hemisphere (RH) processing that is important to humor appreciation (Blake, 2003). Therefore, it is possible that differences in IHI, as determined by handedness, may help explain differences in humor appreciation. A growing body of research demonstrates the wide ranging impact of humor use in our daily lives. Because those with increased IHI are better able to consider other perspectives, multiple meanings and can generate more counterfactuals than those with lower IHI (Jasper, Barry, & Christman, 2008), a participant with increased IHI may be more likely to interpret a discriminatory joke as both offensive and funny. In order to test this hypothesis, 112 participants watched two short videos of the comedian Gabriel Iglesias (one including discriminatory humor and one not). Participants rated the funniness and offensiveness of each video. They completed

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the Edinburgh Handedness Inventory to determine IHI. There was no significant influence of IHI. There was a significant effect of joke type. Though participants found the non-discriminatory joke less offensive, they rated the jokes equally funny. Implications to be discussed.

#33

Title: How do Immigrant Parent-Child Adaptation Differences Affect Psychological Distress and Personal Growth in Immigrant Youth?

Author(s): Velinka Marton, Brooklin Adams

Faculty sponsor(s): Kanako Taku

Affiliation: Psychology, Oakland University

Abstract: First-generation immigrant youth deal with acculturative challenges that can result in varying levels of psychological distress (Sam et al., 2008). Family conflict can exacerbate distress when resulting from adaptation-related parent-child differences (Lee et al., 2000). The purpose of the present study was to examine psychological effects of youth-perceived differences, predicting that smaller-perceived adaptation differences will yield lower levels of psychological distress. The study also examined potential posttraumatic growth (PTG) in relation to adaptation differences. College and high-school students were interviewed and indicated perceptions of small-medium ($n=6$; $M_{age}=18.33$, $SD=1.86$) or big ($n=6$; $M_{age}=20.17$, $SD=1.47$) parent-child adaptation differences, psychological symptoms (i.e., depressive, anxious, general/acculturative stress; DASS; Lovibond & Lovibond, 1995; MASI; Rodriguez et al., 2002), and a measure of PTG if participants perceived parent-child adaptation-related struggles (PTGI-SF; Cann et al., 2010). A Mann-Whitney test indicated marginally significant differences with general stress (small-medium: $M_{dn}=1.29$; big: $M_{dn}=1.93$; $U(10)=6.00$, $p=.051$) and anxious symptoms (small-medium: $M_{dn}=.50$; big: $M_{dn}=1.36$; $U(10)=6.50$, $p=.065$). The big differences group included more reports of PTG ($n=4$ versus $n=3$). Results suggest that degree of parent-child adaptation differences may affect distress and growth in youth. Adapting to a new culture is complex. Future studies should include perceived social support in conjunction with perceptions of parent-child differences.

#34

Title: Medical Mishaps: Does a Physician's Specialty determine Severity?

Author(s): Brooklin Adams, Nicholas Elias

Faculty sponsor(s): Kanako Taku

Affiliation: Psychology, Oakland University

Abstract: Over half of the medical mishaps reported in the Harvard and Australian studies resulted from surgery (Weingart, Wilson, Gibberd, and Harrison, 2000). Physicians who specialize in surgical fields may be more prone to making medical mishaps than those who work in non-surgical fields. The purpose of the present study was to examine the relationships between physician's specialties and the severity of medical mishaps that have been made. Serious medical mishaps are errors causing permanent injury, patient death, or failure of executing a planned action; minor medical mishaps are errors that could have caused harm but are not permanent, or life threatening (Bari, Khan, and Rathore, 2016). Physicians registered at a local hospital indicated their medical specialties, which were categorized as either surgical ($n=15$) or non-surgical ($n=67$). Medical mishaps were further categorized as either serious mishaps ($n=43$) or minor mishaps ($n=41$) depending on the nature of the mishap. A Chi-squared test for independence indicated marginally significant differences ($\chi^2=3.58$, $p=.058$). Results suggest that physician's in surgical based specialties are more likely to commit severe medical mishaps than those in non-surgical based specialties. Future studies should include an assessment of medical mishaps at an individual level among the different specialties.

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#35

Title: Varying effects of experience has on the kinds of medical mishaps occurring during a physician's practice

Author(s): Nicholas Elias, Brooklin Adams

Faculty sponsor(s): Kanako Taku

Affiliation: Psychology, Oakland University

Abstract: Bari et al., (2016) found that residents attributed the occurrence of medical mishaps to inadequate experience followed by missing warning signs. Physicians who have worked 11 years or more may be prone to making medical errors due to a biased certainty toward successful past treatments. The purpose of this study is to examine how years in-practice can influence past of medical mishaps a physician made within that past five years. Missed information is described as a medical mishap where the physician missed a reading from a scan or test (n= 31). Potentially harmful are mishaps that have occurred due to a physician's choice of treatment (n= 47). Attendings from Midwestern Hospital indicated years of practice that was categorized into 10 years or less (n= 25) and more than 11 years (n= 57). A chi-squared of independence was performed showing an insignificant result ($\chi^2=2.119$, $p= .146$). Results suggest that years a physician has been practicing does not affect the kind of medical mishap they may be involved in. Future research is suggested to observe the most common medical mishaps within each physician specialty.

#36

Title: Measuring Medication Effectiveness on Tremor in Parkinson's Disease

Author(s): Kate Nitowski, Jordan Juliao, Gregory Fruchey

Faculty sponsor(s): Nathaniel Miller, Na Zhu (Engineering)

Affiliation: Psychology, University of Michigan-Flint

Abstract: Parkinson's Disease (PD) is a movement disorder characterized by tremor (Weiner, 2007). While anti-PD medications are relatively effective for mitigating tremor, medication effectiveness wanes over time and some individuals might not experience tremor reductions with medications (Fernandez, 2012). Due to this waning, being able to accurately measure and assess tremor is of importance to patients and researchers to track disease progression and the effectiveness of tremor interventions. The current study tested a method of tremor data collection and processing that could be used for future research in our laboratories. Specifically, we used an inertial measurement unit (accelerometers and gyroscopes) to measure linear and rotational motions of tremor in the X, Y, and Z directions (6-degrees of freedom). Resting tremor data was collected from 32 participants with PD, both ON and OFF their anti-PD medications. A Power Spectral Density algorithm was used to determine dominant tremor frequency (the highest occurring tremor frequency along a particular axis) and tremor rotation. In general, we found tremor motion was reduced in individuals with PD when ON their anti-PD medications, compared to the OFF medication state. However, these changes did not reach statistical significance. Future directions for this research will be discussed.

#37

Title: Feminine Ideologies of the 1960's

Author(s): Ashley Averill

Faculty sponsor(s): Kellie Hay

Affiliation: Communication and Journalism, Oakland University

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Abstract: In the United States during the 1960's women were expected to conform to certain feminine ideologies such as docility, sexual objectification and submission to born inferiority. This paper documents and scrutinizes an episode from the A.M.C. drama, Mad Men. Specifically, the author employs a theory and method of ideology critique so as to examine the politics underlining Mad Men's gender-based plot plays. The author focuses on hegemonic femininity through the roles of women in the workplace, as well as how men treat female counterpart in fictional forms; fiction and truth, Mad Men contains the seeds of societal and cultural norms of the time.

#38

Title: Black Holes Get a Reality Check II: The View from Hubble's Ultraviolet Eyes

Author(s): Lacie Gladding, Hayden Ruff, Alex Bakhsh, Cordell Harris

Faculty sponsor(s): Rajib Ganguly

Affiliation: Physics, University of Michigan-Flint

Abstract: Quasars are powered by the accretion of matter onto supermassive black holes at the hearts of galaxies. As the accreting matter orbits in the disk, the orbit decays and sends the matter closer to the black hole. This infall results in a superheated gas that glows intensely, producing light across the electromagnetic spectrum. Observed spectra also show gas outflowing from the system, silhouetted against this luminous disk, providing insight into the structure of the system. As a parallel study to our modelling efforts, we are examining the detailed ultraviolet spectra of 14 objects from the Hubble Space Telescope Cosmic Origins Spectrograph. In four of these objects, we observe the outflowing gas in absorption from both neutral hydrogen (HI) as well as four-times ionized nitrogen (NV). Here, we aim to infer the range of ionization conditions in which these two species can co-exist. From this, we are interested in inferring potential locations and the geometric structure of the gas. In turn, this will inform our modelling efforts with regard to the incorporation of the outflowing gas as well as potential needs for additional sources of ionization, such as an X-ray corona.

#39

Title: Preferences of Arab Americans In regards to Romantic Relationships (PAIR)

Author(s): Gharram Mashrah

Faculty sponsor(s): Michelle Leonard, Pamela McAuslan

Affiliation: Psychology, University of Michigan-Dearborn

Abstract: Couples relationships have been directly linked to well-being. However, little is known about how individuals in racially/ethnically diverse communities, notably the Arab community, view potential relationship partners. Specifically, there are unanswered questions regarding how divorce is viewed in potential relationship partners given the "taboo" nature of this topic within the Arab community. Therefore, data were collected from 80 young adults in the Arab American community. Participants asked to give their views of a "potential dating partner" in a randomly assigned condition of either a divorced or not divorced individual. Analyses sought to determine (1) if those who did not identify as highly religious would have a more positive view of divorce, (2) whether or not gender had an effect on responses, (3) whether divorce in the potential partner history negatively affected responses, and (4) what the effect would be on the view of divorce if religiosity was held constant. Surprisingly, results showed no differences in responses between genders or on the effects of the variables measured. Results showed that there were some differences between ratings for men and women. Specifically, men scored higher than women on intelligence ($t(38) = 1.400, p < .05$), authenticity [$t(38) = -0.103, p = 0.815$], interesting [$t(78) = 0.284, p = 0.867$], and perceptiveness [$t(38) = 1.067, p = 0.379$]. However,

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differences based on condition and/or religion were not significant, which was not expected. Results are discussed in terms of socio-cultural consideration and directions for future research.

#40

Title: Aesthetic Reconciliation in Imagining Space

Author(s): Mark Emmendorfer

Faculty sponsor(s): Jan Furman

Affiliation: English / American Culture, University of Michigan-Flint

Abstract: In Fredric Jameson's book Postmodernism he insists that in the constant mutation of space of the post-modern landscape, in this situation, "there has been a mutation of the object unaccompanied by any equivalent mutation in the subject" (38). The rapidity of this change, and the corresponding deprivation of any feeling of meaningful connectivity to one's work or even one another, presents a series of place specific traumas too sentimental or personal to be considered outside their imaginary sublimations in film and literature. There is in this deprivation, our inability to cognitively map the difference along an imaginary spatial terrain that we feel the need to aestheticize this impotence in our thinking. In the following pages, I will interpret this coming to terms with the over-complexity of the machination of late capitalism. My intention is to meditate on how this substantive experience is presented through different representations of space - textually and visually in the various exhibits I use as primary examples of this tendency: From the sociology of Edward Soja, finance literature, to the iconoclastic worlds of science fiction novels and film.

#41

Title: Romance, Self Worth, or Family: Which Do You Choose?

Author(s): Amanda Myers

Faculty sponsor(s): Rebekah Farrugia

Affiliation: Communication and Journalism, Oakland University

Abstract: This project is an analysis of two Starbucks Valentine's Day advertisements that were posted on social media; one was posted in 2014 and the other posted in 2019. The advertisements are noteworthy because Starbucks uses an entirely different approach to sell its brand on Valentine's Day compared to the majority of other companies. Specifically, I argue that Starbucks sells its brand on Valentine's Day by challenging the ideology that romantic love is worth celebrating over all other types of love. This project explores the various techniques Starbucks uses to sell its brand on Valentine's Day, such as portraying how self love and familial love is just as important, or even more important, than romantic love. Another area of exploration in this project includes how Starbucks came to be the leading worldwide coffeeshop brand, specifically due to its focus on building deep, emotional connections with its customers. Lastly, I explore Starbucks' intention behind challenging the ideology that romantic love is the most important love "is it because Starbucks genuinely wants to create social change, or is it just an innovative way to navigate through the clutter of advertising?"

#42

Title: Effects of Environmental Factors on Seed Germination of Common-Evening Primrose (*Oenothera biennis*)

Author(s): Hawra Alsafi

Faculty sponsor(s): David Susko

Affiliation: Natural Sciences, University of Michigan-Dearborn

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Abstract: The purpose of this research was to identify the range and optimal abiotic environmental conditions for seed germination of common evening primrose to understand its broad distribution in a wide variety of soil types and climatic conditions in the eastern half of North America. The common-evening primrose is widely known for its medicinal properties. Environmental factors affecting germination include the following: (1) temperature and light, (2) cold stratification, (3) solution pH, (4) osmotic potential, and (5) exposure to plant hormones. Germination of seeds (≈ 2%) was low when seeds were exposed to continuous darkness at all temperature regimes, indicating a strong innate light requirement for germination. Maximum germination of seeds (69%) occurred at alternating light and dark at a temperature regime of 25/15 °C. However, higher alternating temperatures (30/20 °C) and lower temperature regimes (≈ 20/10 °C) resulted in lower germination percentages. Cold stratification at 4 °C enhanced germination at all temperature regimes. Germination was significantly reduced below 50% in osmotic solutions with water potentials of -0.3 MPa and below. Based on common-evening primrose seeds responses to various temperatures and chilling treatments, their seeds seem to possess physiological dormancy imposed by incomplete embryo development resulting in annual conditional dormancy/nondormancy cycles.

#43

Title: GCMS Analysis of Floral Volatiles in Honey

Author(s): Tristan Calamita

Faculty sponsor(s): Linda Schweitzer

Affiliation: Environmental Science, Oakland University

Abstract: The relationship between flavor compounds in honey and flower nectars was studied in order to identify potential chemical markers that would be flower-specific enough for honey typing. Local flower heads and honey samples in and around Oakland University (Rochester, Michigan) were collected in seasonal batches and analyzed for volatile organic compounds (VOCs) by headspace solid phase micro extraction (SPME) Gas Chromatography/Mass Spectrometry (GC/MS). Flowers analyzed thus far were Queen Anne's Lace, chicory, clover, alfalfa, thistle, bee balm, stone crop, St. John's wart, catnip, and yarrow. Over sixty flavor compounds were found in flower heads, but few matched the flavor compounds in honey. Limonene, which has a citrus odor, was found in a honey and Queen Anne's Lace, only thus far. P-cymene which is described as fresh citrus, terpenic, woody, spicy was found in the OU early summer honey (2016) and bee balm, only. Linalool and caryophyllene were found in honey and several florals. Other reasons for the lack of matches between VOCs in honey vs flowers to be investigated include bee metabolic transformations of VOCs, and loss of VOCs when bees evaporate their nectar.

#44

Title: Ideological Awareness in Game of Thrones

Author(s): Jack Norton

Faculty sponsor(s): Kellie Hay, Sharon Howell

Affiliation: Communication, Oakland University

Abstract: In this paper, the author examines multiple episodes from two seasons of HBO's notorious drama, Game of Thrones. Employing a theory of ideology and ideology critique the paper highlights the politics of sexuality, gender, and power at work in fantasy fiction. The social imaginary through which the narratives are devised is dark, regressive and progressive all at once. This paper demonstrates the tactics through which dominant ideology is pulled through this cultural text. The author argues that this text is a fresh approach to reimagining history.

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#45

Title: Investigating the Academic Preparedness of First-year Engineering Students

Author(s): Omimah Bazzi

Faculty sponsor(s): DeLean Tolbert

Affiliation: Industrial and Manufacturing Systems Engineering, University of Michigan-Dearborn

Abstract: Enrollment in STEM Majors has increased over the years however it appears that retention in those majors is becoming an immense problem. Low persistence of incoming engineering students in the STEM field is due to three main factors: ineffective high school preparation, influence of social and psychological effects, and the lack of transition programs in high school that help prepare students for college. However, more research is needed to understand how other factors such as availability of engineering resources, quality of high school education, and availability of Advanced Placement Calculus affect perception of academic preparedness of incoming engineering students. To understand these factors, we have distributed an online survey to students in an Introductory Engineering class (n =119) to identify the most important factors that affect perception of academic preparedness at the college level. We have found that more than half of incoming students have taken AP Calculus in high school and claim that the course has prepared them "very well" for college. In addition, preliminary results indicate that about 60% of engineering students' parents/guardians have had a University/college education. In this study we present how different factors affect the perception academic preparedness of first-year engineering students.

#46

Title: Baicalein induces cell cycle arrest in breast cancer cells

Author(s): Nicodemus Monear, Shannon De Ruiter, Makayla Watson

Faculty sponsor(s): Besa Xhabija

Affiliation: Chemistry and Biochemistry, University of Michigan-Flint

Abstract: Baicalein is a naturally-occurring substance found in certain herbaceous species such as *Scutellaria baicalensis* and *Oroxylum indicum*, as well more well-known species such as *Thymus vulgaris* (thyme). Classified as a flavonoid derivative, baicalein has been shown to inhibit cell proliferation by signaling apoptotic pathways in cell lines typically resistant to induced cell death. In this analysis, we have assessed cell viability by methylene blue staining and have shown that T47D breast cancer cells exhibit stunted proliferation patterns within 24 hours of exposure to baicalein at concentrations as low as 100 μM . Additionally, we have performed an analysis of the cell cycle by flow cytometry for which we have observed an arrest in the S phase, further indicating inhibited cell proliferation.

#47

Title: Monitoring Accretion Behavior in the Black Hole X-Ray Binary V404 Cyg

Author(s): Austin Blevins

Faculty sponsor(s): Will Clarkson

Affiliation: Physics and Astronomy, University of Michigan-Dearborn

Abstract: We present the status and indications from the UM-Dearborn photometric monitoring campaign on the prototypical black hole X-ray binary V404 Cyg. Three seasons of photometric data have now been taken (two with the MDM 1.3m telescope, one with the MDM 2.4m). After an outburst in 1989, V404 Cyg was in quiescence for 26 years until it entered outburst phase twice in 2015. It has since

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returned to quiescence. This presents an excellent opportunity to compare the optical behavior of this source to its behavior post-1989 outburst, and to discover which variability features might be characteristic of black hole X-ray binary outbursts as a mechanism, and which might vary from outburst to outburst. With time resolution down to 15 seconds (depending on the conditions), we have constructed optical lightcurves with good coverage of three binary orbits in three post-outburst epochs. We measure both the orbital modulation and the sub-orbital flaring, the latter of which traces behavior in the inner accretion disk surrounding the black hole. We present a systematic, quantitative comparison between the post-2015 and post-1989 behavior, and present indications on whether V404 Cyg's rapid-timescale variability fingerprint really has changed between the outbursts, as our first season of monitoring indicated.

#48

Title: Black Holes Get a Reality Check I: Modeling the Dynamic Appetites of Quasars

Author(s): Alex Bakhsh, Cordell Harris

Faculty sponsor(s): Rajib Ganguly

Affiliation: Physics, University of Michigan-Flint

Abstract: Quasars are powered by the accretion of matter onto supermassive black holes at the hearts of galaxies. As the accreting matter orbits in the disk, the orbit decays and sends the matter closer to the black hole. This infall results in a superheated gas that glows intensely, producing light across the electromagnetic spectrum. Observed spectra also show gas outflowing from the system, silhouetted against this luminous disk, providing insight into the structure of the system. By constructing semi-analytic computational models, we hope to recreate these dynamic environments and compare the simulated spectra to observed spectra to examine the geometry and physical conditions of the silhouetted gas. We present challenges in modeling the geometric and physical aspects of the accretion disk, as well as incorporating the outflowing gas into these simulations. We also present future undertakings in simulating the system's X-ray corona and astrophysical jet.

#49

Title: The Feeling of What Happened: Adult Attachment Predicts the Emotional Tone of Self-Defining Interpersonal Memories

Author(s): Sydney Rumley, Brady Malone, Sarah Chamseddine, Megan Huynh, Justin Vu

Faculty sponsor(s): Caleb Siefert

Affiliation: Psychology, University of Michigan-Dearborn

Abstract: Social cognitive theories suggest expectations for the future are shaped by how we construe the past. This study examines how attachment status relates to autobiographical memories. Sixty undergraduates (50% men; mean age = 19.37 [SD = 1.61]) completed this IRB-approved study for course credit. Regarding ethnic identity, 5% identified as African-American, 28.3% as Middle-Eastern, 8.3% as Asian, 5% as Hispanic, 50% as Caucasian, and 3.4% as "Other." Participants completed the study individually. They typed three "interpersonally self-defining memories" (ISDMs) anonymously into a computer, rated the memories for emotional tone (i.e., what they felt during the memory; what they felt at the time of recall), and then completed self-report attachment scales. Attachment avoidance was associated with negative past ($r = .20$) and present ($r = .23$) emotions. Attachment ambivalence was associated with negative past emotion ($r = .32$) and positive present emotion ($r = .20$). Attachment ambivalence was also related to overall past emotional intensity ($r = .29$) and current emotional intensity ($r = .30$). Results are discussed in terms of prior findings regarding differences in dismissive-

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and fearful-avoidance. Implications are drawn, limitations are noted, and future directions are discussed.

#50

Title: Third Molar Development: Providing Functionality or Losing Importance

Author(s): Jade Barreto

Faculty sponsor(s): Anne Danielson-Francois

Affiliation: Biology, University of Michigan-Dearborn

Abstract: Modern Homo sapiens and Neanderthals share similar dentition, which includes wisdom teeth. The question argued includes: Why do people around the world still have wisdom teeth? Are they currently providing an important function? Or not? In order to explore these questions, researchers begin by determining that wisdom teeth provided an essential replacement for worn- down second molars in Neanderthals. Investigators compared tooth wear in Hunters and Gatherers and Neanderthals to modern Homo sapiens in order to determine whether third molars still have an underlying function. Evidence suggests that wisdom teeth are still imperative in Hunters and Gatherers; however, they no longer provide a substantial use like they once did. Anthropologists and dentists also compared the complications and tooth wear of which Homo sapiens exhibit. Wisdom teeth in modern Homo sapiens display numerous complications, including impaction, infection, and surgical removal. The dental records and complications in modern Homo sapiens suggests that wisdom teeth no longer provide an essential role to people living in agricultural societies. Through dental records and anthropological research, I argue that third molars are vestigial and no longer provide an important function for people living in agricultural based societies.

#51

Title: Analyzing the Acquisition of Dr. Pepper Snapple Group by Keurig Green Mountain, Inc.

Author(s): Raymond Kusch, Kyle Arrowood, Brant Beck, Peter Millar

Faculty sponsor(s): Sandun Perera

Affiliation: School of Management, University of Michigan-Flint

Abstract: The world of business is an ever-changing platform that requires every firm to be adaptive, as well as to think about their future for success in an increasingly demanding market setting. We investigate the operations and market performances of Dr. Pepper Snapple Group to determine their success before their decision to merge with Keurig Green Mountain, Inc. In this presentation, we will provide information on the operational and organizational strategies that Dr Pepper-Snapple had implemented to imply the direction that their company would have forgone without a drastic business decision. We use quantitative and qualitative methods to derive managerial insights on this acquisition.

#52

Title: Attitudes on Whether or not National Foreign Spending is too Low by Demographics

Author(s): Nathan Scott

Faculty sponsor(s): Rachel Petrak

Affiliation: School of Management, University of Michigan-Flint

Abstract: The General Social Survey is funded by the National Science Foundation. The GSS surveys are unbiased and surveys people on various aspects of their lives. There are 1500 participants per survey wave and is taken biennially. This project is analyzing variables from the Current Affairs module to see how peoples' opinion on America's national spending/foreign aid to other countries differ based on sex,

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race, ethnicity, citizenship status, education, and age. It is hypothesized that females, blacks, Hispanics, and noncitizens will be more likely to believe that the national spending on foreign aid is too low since they tend to be more liberal. It is also hypothesized that the younger respondents will be more likely to believe that the national spending on foreign aid is too low since they tend to be more liberal and that the more educated respondents will not believe that national spending on foreign aid is too low since they tend to be more aware of the high national deficit. This paper will report all these comparisons while presenting a regression model to see if these predictions match up with the outcomes. A conceptual model for the relationships among the variables will also be presented.

#53

Title: Medicinal Plants in the Bible and Quran

Author(s): Megan Huynh, Aliah Sareini

Faculty sponsor(s): Marilee Benore

Affiliation: Biology & Biochemistry, University of Michigan-Dearborn

Abstract: The Bible and the Holy Quran serve as ancient literature pertaining to the religious and spiritual aspects of life. In addition to this, they also serve as timelines for the healing effects of plants in holy scriptures. A library review of the Bible, Quran, scholarly research articles, and literature pertaining to the medicinal use of traditional plants and herbs has aided in creating an index illustrating its history and application in modern day. The plant's mechanism is also discussed as well as its chemical composition and respective interaction with the body. This compilation of the origin, cultivation, preparation, and application of plants and herbs today will serve as a source of interest for students who may be studying abroad in the Middle East and Mediterranean. It will also allow for transparency between practitioners and patients to prevent negative drug interactions in order to gain a holistic treatment option. Practitioners become more cognizant of the ethical and cultural implications when using these plants by understanding its native country's practices. People who may not have access to prescribed medication may use this index to locate easily available plants to alleviate topical, somatic symptoms by extracting or distilling an oil from the plant. This is a reservoir of information pertaining to a multicultural religion's application of natural plants. Continuing this research will be a viable source of potential compounds for treatment that can be applied on a much larger scale in modern pharmacology.

#54

Title: A Gain of Function Paradox: Targeted Therapy for Glioblastoma Associated with Abnormal NHE9 Expression

Author(s): Dhyana Guntur

Faculty sponsor(s): Kalyan Kondapalli

Affiliation: Biology, University of Michigan-Dearborn

Abstract: Glioblastoma multiforme (GBM) is the most frequent and inevitably lethal primary brain cancer in adults. It is recognized that overexpression of the endosomal Na^+/H^+ exchanger NHE9 is a potent driver of GBM progression. Patients with NHE9 overexpression have a 3-fold lower median survival relative to GBM patients with normal NHE9 expression, using available treatment options. New treatment strategies tailored for this GBM subset are much needed. According to the prevailing model, NHE9 overexpression leads to an increase in plasma membrane density of epidermal growth factor receptors (EGFRs) which consequently enhances GBM cell proliferation and migration. However, this increase is not specific to EGFRs. In fact, the hallmark of NHE9 overexpression is a pan-specific increase in plasma membrane receptors. Paradoxically, we report that this gain of function in NHE9 can be exploited to effectively target GBM cells for destruction. When exposed to gold nanoparticles, NHE9

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overexpressing GBM cells accumulated drastically high amounts of gold via receptor mediated endocytosis, relative to control. Irradiation of these cells with near-infrared light, led to apoptotic tumor cell death. A major limitation for delivering therapeutics to GBM cells is the blood brain barrier (BBB). Here, we demonstrate that macrophages loaded with gold nanoparticles can cross the BBB, deliver the gold nanoparticles and effect the demise of GBM cells. In combination with receptor tyrosine kinase inhibition, we show this approach holds great promise for a new GBM targeted therapy.

#55

Title: Raman spectroscopy instrumentation for characterizing semiconductor heterostructures

Author(s): Gavin Trevorrow

Faculty sponsor(s): Biplob Barman

Affiliation: Physics, University of Michigan-Flint

Abstract: In this work we discuss the design and instrumentation of a Raman spectroscopy set up, capable of studying the phonon (molecular vibration in the crystal structure) energy shifts in artificially synthesized nanomaterials. This is followed by a brief discussion of the theoretical framework behind Raman measurements. As a means to verify the accuracy of the module we used this system to characterize the structural fingerprint of a toluene sample in quartz, and compared it to results published in peer reviewed journals.

#56

Title: Gender Representation In Professional Wrestling

Author(s): Zachary Sandoval

Faculty sponsor(s): Valerie Palmer-Mehta

Affiliation: Women and Gender Studies, Oakland University

Abstract: The World Wrestling Entertainment Industry (WWE) has been claiming that they are pushing a women's social movement as of late and letting its female talent shine. A women's match recently was the main event of Wrestlemania in April. The WWE is pushing a narrative that women are the future and that they are progressive with today's inclusiveness standards in media and pop culture. In my paper I analyze gender norms within the WWE and give evidence that the company is hypocritical when it makes these claims because men's and women's communication styles are stereotypical and "traditional". Men are aggressive, loud, and conflict seeking whereas women are sexualized and supportive of one another. Further in the paper I suggest negative consequences of reinforcing gender norms every week on television.

#57

Title: The Essence of the Hijab: What and Why?

Author(s): Zainab Alnashi

Faculty sponsor(s): Pamela Aronson

Affiliation: Sociology, University of Michigan-Dearborn

Abstract: The purpose of my presentation is to showcase my study concerning the various forms women take on when wearing the hijab in terms of fashion, modernity, and religion. A lot of women are stuck between this dichotomy of immigrant parents and American society, and I intend to help others understand how they navigate through this lifestyle. This study will answer why women chose to wear it, how they overcome the obstacles they face, and what the hijab personally means to them. I will be presenting some (not all) of the claims found throughout my study.

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#58

Title: Pashtunistan

Author(s): Zarghoona

Faculty sponsor(s): Frank Wayman

Affiliation: Political Science, University of Michigan-Dearborn

Abstract: Pashtunistan issue. This study examines the separation of Afghanistan and creation of the Durand line and the princely states that emerged from it which were made to join Pakistan. Afghanistan to this day does not recognize the Durand line as an official border.

#59

Title: Synthesis of fluorinated 1,5-3H-benzodiazepines from substituted o-phenylenediamines and 2-fluoroalk-3-yn-1-ones

Author(s): Trevor Olson

Faculty sponsor(s): Roman Dembinski

Affiliation: Chemistry, Oakland University

Abstract: Benzodiazepines are a class of biologically active heterocycles that are used as active pharmaceutical ingredients. Method developments that expand the accessible fluorinated benzodiazepine library provide potential improvements to drug metabolic stability and may mitigate unsolicited side effects associated with their use. The installation of a fluorine atom on the C-3 carbon of the 1,5-3H-benzodiazepine framework has been achieved via novel synthesis. Microwave-assisted reaction of bifunctional electrophilic synthons, 2-fluoroalk-3-yn-1-ones with o-phenylenediamines, yields 3-fluoro-1,5-3H-benzodiazepines. Spectral characterization of (E)-3-amino-2-fluoro-2-alkenone intermediate confirmed the chemoselectivity of amine nucleophile towards the alkyne function and supports the proposed mechanism of benzodiazepine formation. This methodology accesses the 1,5-3H-benzodiazepine scaffold with a specifically positioned fluorine atom at the C-3 carbon, expanding both the library of drug candidates and synthetic avenues.

#60

Title: Light-echoes as a tool for mass measurement in X-ray binaries

Author(s): Thomas Sutter

Faculty sponsor(s): William Clarkson

Affiliation: Natural Sciences, University of Michigan-Dearborn

Abstract: X-ray binaries comprise a black hole or neutron star in close orbit with a donor star. Having orbital periods on the order of a few days, X-ray binaries provide critical laboratories for the accretion/outflow process seen at all astrophysical scales, if their system parameters (e.g. mass, orbital inclination) can be constrained. We have developed a new technique to supply these constraints, using Markov Chain Monte Carlo methods conditioned on delayed X-ray/optical variability correlations that depend on the geometry of the binary. In order to accurately simulate this "light echo" process, we construct a 3-dimensional model of the rotationally-distorted donor to numerically predict echo delay time as a function of orbital phase. The potential of this method to set joint constraints on system parameters is demonstrated using both synthetic test-cases and real observations of X-ray/optical light echoes from the literature. Observed echo delay and radial velocity data from the systems Sco X-1 and 4U 1636-536/V801 Ara are analyzed with our method, producing joint posterior probability distributions for the orbital parameters. By breaking the degeneracies inherent when radial velocity datasets alone

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are used, the addition of light echo data provides improved mass measurements for the system components.

#61

Title: Whiteness Rewarded in Professional Wrestling

Author(s): Zachary Sandoval

Faculty sponsor(s): Kellie Hay

Affiliation: Communication and Journalism, Oakland University

Abstract: The World Wrestling Entertainment Industry (WWE) is a popular reality television medium which combines athletics and acting. While the WWE has the potential to use this platform (which receives millions of viewers every week) to create narratives that support multiculturalism and equality, they do not. Instead, the WWE has had a history of and continues to reward the ideology of whiteness through the portrayal of certain characters and the types of people that are placed at the top of the company. In my paper I evaluated multiple examples of how certain characters who express whiteness are the most successful and in depth characters in the product. Black characters have had been portrayed as nothing more than physical monsters, and other non-white characters are portrayed as criminals. I then suggest that whiteness rewarded in reality television teaches its audience that one must shed non-whiteness in order to be successful.

#62

Title: Gender and Memory

Author(s): Sabrina Dougherty

Faculty sponsor(s): Peter Molinaro

Affiliation: Psychology, University of Michigan-Flint

Abstract: Research into the psychology of eyewitnesses has been rather narrow pertaining to gender-bias, and has not addressed how evolutionary advances may impact how people recall faces differently. According to Parental Investment theory, women have much more investment than men do and those who adapt successfully continue their gene pool (Buss, 1995), which could give women an advantage in differentiating between faces as a defense mechanism. Additionally, Areh (2011) showed that women have more accurate and detailed memory recall, especially with descriptions of both victims and targets. If there is a difference in how diagnostic the genders are this would be important to consider in eyewitness testimony, as many people have been incarcerated and later found innocent due to misidentification by eyewitnesses. We tested for differences in diagnosticity between genders via survey with an old/new recognition test design followed by self-reported confidence scoring, and expected it would show women to be more diagnostic with better identification rates and men to be more confident with lower accuracy rates.

#63

Title: Off-Grid Energy System

Author(s): Thomas Brown

Faculty sponsor(s): Quamrul Mazumder

Affiliation: Engineering, University of Michigan-Flint

Abstract: Research has been done on the design and the need for a product that can be used off the grid by people on recreation or otherwise. Our project is an example of a device that can provide power from the resources that are readily available around us. We are harnessing one of the alternative energy

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sources in the form of biomass (wood), and using it to power devices that we have been accustomed to using in our daily life. We will look into the market for such a product, discuss the product architecture, and the manufacturing processes that will need to be done in order to develop this product.

#64

Title: Water Channel

Author(s): Kyle Willoughby

Faculty sponsor(s): Quamrul Mazumder

Affiliation: Engineering, University of Michigan-Flint

Abstract: The project is a water channel to test and observe fluid flow/mechanics at a high school/university level.

#65

Title: How Capitalism Harms the United States

Author(s): Cherise Pagels

Faculty sponsor(s): Otrude Moyo

Affiliation: Social Work, University of Michigan-Flint

Abstract: My video/slide presentation will discuss certain aspects about capitalism in the United States, and how this system does not work for the majority. There will be examples of the five forms of multiculturalism (conservative, liberal, pluralist, essentialist and critical) showing progression to a state of awareness and a shift in what we perceive. I will discuss how slavery helped shape this country to what it is today. Through discrimination, racism, marginalization and othering, I demonstrate how the individuals who are considered the minorities are often starting life at a disadvantage. With the aid of statistics, graphs and other sources, we can better identify these disadvantages. There is an increase in health issues and a higher mortality rate of those who are disadvantaged. The wage disparities of those that are considered minorities are yet another disadvantage. I aim to bring awareness to possible solutions to reach a state of egalitarianism by discussing some aspects of a socialist perspective.

#66

Title: Revisionism Repudiated, Reputation Restored: The Art of Narimanbekov and The Book of Dede Korkut

Author(s): Carl Jaeger

Faculty sponsor(s): Claude Baillargeon

Affiliation: Art and Art History, Oakland University

Abstract: The Book of Dede Korkut is the national epic narrative of the Azerbaijani people, originating in the 9th century. It is their repository of ethnic identity, history, and values. Togrul Narimanbekov (1930, 2013) twice painted illustrations for an adaptation of the Dede Korkut narratives, written by Anar Rasul Rzaev, entitled Dede Korkut: A Story Based on the Azerbaijani Epic (pub. 1980 and 2011). Narimanbekov created the first iteration under restrictive Soviet control. His second iteration (2009, 11), painted after the regime collapsed, made a new, bold, visual statement: Azerbaijan's national narrative was finally fully liberated from outsider influences. This paper examines Narimanbekov's Dede Korkut paintings in their socio-political context. First, I establish the importance of The Book of Dede Korkut to the Azerbaijani people. Then, I discuss how tsarist Russia's russification policy suppressed Azerbaijani identity. I further examine the Soviet regime's efforts to establish Azerbaijani ethnogenesis, its ever-changing historiography, and "The New Soviet Man," which denied Azerbaijani heritage. I also discuss

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Soviet manipulation of national epic narratives for ideological purposes. I do this to repudiate Soviet revisionist history of the Azerbaijani people. Ultimately, I argue that Narimanbekov's paintings actively contributed to restoring the honor and reputation of the Azerbaijani people.

#67

Title: Isolation of High Quality Genomic DNA From Unique Bacteria

Author(s): Joseph Kako

Faculty sponsor(s): Jerry Sanders

Affiliation: Biology, University of Michigan-Flint

Abstract: Isolation of DNA from bacteria for genetic analysis has had a significant history dating from the middle of the twentieth century or slightly before. As advancements in understanding of the genome have developed, we have progressed from investigating the structural genetic element of cells to correlating gene expression to the physiological function to whole genome sequencing. That available information derived from such studies has permitted a broader range of scientific inquiry. Techniques for genetic isolation have changed at an equivalent rate. Over time, techniques have been refined to improve quality and quantity of DNA isolated, however, the general process consists of lysis of cells in a way that DNA stability is preserved and differential solubilities to separate DNA from other cellular components in the lysate. Many of the advancements have focused on the more common microorganisms used in the research laboratory, and often, protocols that have been established for one group of microorganisms are not universally applicable to others due to unique differences in cell structure and function. This research evaluates four recognized techniques for genetic extraction of DNA from bacteria and evaluates their effectiveness of isolation of genomic DNA from a non-typical bacterium.

#68

Title: Sharks in captivity: Utilizing habitat use and behavior as an assessment of animal welfare

Author(s): Alexis Hart

Faculty sponsor(s): Sandra Troxell-Smith

Affiliation: Biological Sciences, Oakland University

Abstract: This project explores the behavior and habitat use of sharks in captivity at the Michigan Sea Life Aquarium. Little behavioral research is currently available on sharks, potentially due to the fact that they are difficult to observe reliably. However, this also leads to a general lack of knowledge about typical behavioral patterns in captivity that may impact welfare. Using both scan and instantaneous focal sampling, the location and behavior of five shark species at the aquarium were recorded from December 11th, 2018-March 28th, 2019 over several months. It was found that all of the animals in the exhibit displayed normal species-specific behaviors and utilized all of their habitat space evenly except for the Smooth Dogfish, who had a history of displaying stereotypic behaviors. As behavior and habitat use are both indicators of animal welfare, these results can be utilized to make positive changes to the animals' current environment, especially for the Smooth Dogfish. In addition to helping animals currently in the aquarium, these results may contribute to positive welfare decisions for sharks in captivity worldwide, leading to enhanced conservation efforts for these species.

#69

Title: Teachers as Community Members

Author(s): Nicole Sebok, Camden Forsberg

Faculty sponsor(s): Laura McLeman, Annie Whitlock (Education)

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Affiliation: Mathematics, University of Michigan-Flint

Abstract: The purpose of this research project was to determine the role a teacher should have within their school districts community. The project was researched during the winter semester of the 2018-2019 academic year through the Secondary Education Program at the University of Michigan- Flint campus. The idea that teachers should be involved within their school district's community has been widely explored and accepted as something that should be done. In order to gather data on this concept, personal accounts of the researchers were evaluated along with the completion of twelve observations and two interviews through the Beecher Community School District (Flint, MI). From the collected data, it was concluded that teachers should interact with the community as often as their schedule allow. Further findings indicated that there is a positive correlation between students observing teachers within a community and levels of trust. With an increase in trust, a student is more likely to attend class, be engaged, and have a more positive education experience. Considering the research, it is advantageous for a teacher to be involved within the school district, given that the teachers can balance their personal life and their community involvement.

#70

Title: ^{19}F magnetic resonance probes for activity-based sensing of formaldehyde

Author(s): Kyle Minder

Faculty sponsor(s): Justin Massing

Affiliation: Chemistry and Biochemistry, University of Michigan-Flint

Abstract: Although a known environmental toxin, formaldehyde is produced endogenously during one-carbon metabolism and epigenetic modifications. While intracellular formaldehyde concentrations may reach up to 500 μM , elevated levels have been linked with various disease states, including an array of cancers. To better understand formaldehyde and its biological role, fluorescent probes have recently been reported that exhibit a chemoselective response towards this species. Many of these agents, however, are insufficient for quantifying formaldehyde and are restricted to in vitro imaging given the poor penetration depth of near-infrared light. To address these issues, we report a first-generation ^{19}F magnetic resonance probe for selective formaldehyde detection. Masking 4-fluorobenzaldehyde with a 2-aza-Cope reactive trigger affords the corresponding ^{19}F magnetic resonance probe. Condensation between the homoallylic amine trigger and formaldehyde is followed by a 2-aza-Cope rearrangement and subsequent hydrolysis, thereby releasing 4-fluorobenzaldehyde; this transformation is evidenced by a concomitant downfield shift in the ^{19}F signal from -115 ppm to -103 ppm. While the aforementioned probe exhibits low cellular toxicity, we have so far been unable to detect an ^{19}F signal in treated MCF7 cell lysates. Recent progress towards a more sensitive second-generation ^{19}F magnetic resonance probe will therefore also be discussed.

#71

Title: An ^{19}F magnetic resonance probe for chemoselective detection of hydrogen peroxide

Author(s): Joseph Lange

Faculty sponsor(s): Justin Massing

Affiliation: Chemistry and Biochemistry, University of Michigan-Flint

Abstract: Hydrogen peroxide (H_2O_2) is a well-known reactive oxygen species involved in a variety of biological processes, such as immune response signaling. Despite its importance, elevated H_2O_2 concentrations have been implicated in an array of pathologies, including Alzheimer's and cancer. To better understand the role of H_2O_2 in physiology and pathology, numerous probes have been reported,

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many of which are unsuitable for in vivo imaging applications. These probes have utilized fluorescence and ^{18}F atoms for positron emission tomography (PET). While the former approach is limited due to the visualization depth, PET prohibits longitudinal studies owing to prolonged exposure to ionizing radiation. To address these issues, we report a modular ^{19}F MR platform for selective detection of H_2O_2 . This agent was synthesized by coupling 4-(hydroxymethyl)phenyl boronic acid pinacol ester with nonafluoro-tert-butyl alcohol via a Mitsunobu reaction. Subsequent reaction with H_2O_2 converts the aryl boronic ester to a phenol, which initiates a rapid self-immolative cascade, thereby releasing nonafluoro-tert-butyl alcohol; this transformation is evidenced by a upfield shift in the ^{19}F signal from -70 ppm to -75 ppm. Following selectivity tests with other reactive oxygen species the probe proved to only be reactive with hydrogen peroxide.

#72

Title: Preparation of (alkylaminomethylene) indoles and their Corresponding Main Group Complexes

Author(s): Nicholas Wills

Faculty sponsor(s): Nicholas Kingsley

Affiliation: Chemistry and Biochemistry, University of Michigan-Flint

Abstract: In recent years there has been a plethora of research in the area of main group organometallic catalysts incorporating calcium, magnesium, and aluminum. Our research group has particular interest in the use of organoaluminum complexes in organic transformations. We have continued our work on bidentate indolyl ligands complexed to group 13 metals. The potential utility of chelating ligands incorporating indolyl substituents can be appreciated by comparison of tri(pyrroryl)methane to similar triamidoamine and triamido ligands. The triamidoamine and triamido ligands have similar electronic and coordination properties but differ significantly in charge, pi-donating ability and bridging ability compared to tri(pyrroryl)methane. We have prepared a series of aluminum complexes ligated with alkylaminomethylene indoles that will be screened as pre-catalysts for hydroamination and ring opening polymerization. Details of the synthesis of ligand-precursors and their reactivity towards aluminum alkyls are presented.

#73

Title: What affects American happiness the most?

Author(s): Hyunggyu Kim

Faculty sponsor(s): Rachel Petrak

Affiliation: School of Management, University of Michigan-Flint

Abstract: The General Social Survey is an organization collecting contemporary general trends in the United States, funded by NORC foundation of University of Chicago. The GSS surveys once in every two years, from fewer than 5,000 Americans, and produce more than a thousand researches uses the GSS data annually. Among variety of questions asking about sexual orientation to political concerns and beliefs, some key trends are related with general life satisfactions, including happiness in general, job satisfaction, financial situation, income, and more. Since I believe every-day happiness is most important to both individuals and organizations, my research gets started from a single question: What are the factors affecting American's happiness, and which variable affects American happiness the most? If they are correlated, which variable shows the most significant relationship with the happiness in general? Would Americans be happier as they get older, as they get more educated, as they be more faithful, or as they get more income? My research would not explain any cause-and-effect relationships, but it would give some nice general description of happy American.

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#74

Title: "Courbet's 'Pearly, Pulpy Flesh': The Sexualized Language of Art History"

Author(s): Julia Lypen

Faculty sponsor(s): Claude Baillargeon

Affiliation: Art History, Oakland University

Abstract: The oeuvre of the French Realist painter Gustave Courbet (1819-1877) encompasses a broad range of themes and subjects. Many of his works include nudes and highly sexualized paintings, and some continue to be controversial. According to many 19th c. sources, paintings such as *The Bathers* (1853) and *Woman with a Parrot* (1866) displayed at the Paris Salon were hotly debated at the time. Today these works continue to generate important conversations about the representation of the female nude in the fine arts. This is especially true since the public resurgence of the painting *The Origin of the World* (1866); not publicly shown until 1988. Given the renewed interest in Courbet's nudes generated by this painting, I examine the implications of language in discussing Courbet's nudes as sexualized objects. I focus on the language describing Courbet's nudes and the overtly sexualized language used to describe them. Branching out from the Metropolitan Museum of Art's 2008 exhibition catalogue *Gustave Courbet*, I confront the dehumanizing and excessively sexualized language used to describe Courbet's women in both historical and contemporary sources. By analyzing these sources, I argue this language continues the problematic, harmful sexist discourse reducing the female body to "pearly, pulpy flesh."

#75

Title: Pay Gap in America

Author(s): Alyssa Juratich

Faculty sponsor(s): Otrude Moyo

Affiliation: Social Work, University of Michigan-Flint

Abstract: A presentation that will discuss the pay gap found in America and its impact. The presentation includes a six-minute long video that looks at intersectionality found within the pay gap and also discusses the five forms of critical multiculturalism in relation to the pay gap.

#76

Title: CityPay: A Mobile App to Facilitate Utility Bills Payment

Author(s): Weston Rutherford, Brandon Abbasspour, Christian Hill, Jarrad LaBelle, Ryan Fulton

Faculty sponsor(s): Charlotte Tang

Affiliation: Computer Science, University of Michigan-Flint

Abstract: Paying bills online is commonplace for most people these days, however, Flint and other Michigan cities have had poorly functioning and degraded websites in which residents must use in order to recompense their housing statements. Paying bills should be quick and simple so everyone can participate and not have to worry about late payments, and many other issues with the current design that many homeowners can attest to. While addressing these concerns, the creation of an intuitive, modern, and effortless online and mobile service that everyone can use to simplify their bill paying process is the primary reasoning behind this application.

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#77

Title: Falls Rates Differ by Diagnosis in Older Adults

Author(s): Tyler Ziccardi

Faculty sponsor(s): Jennifer Blackwood

Affiliation: Physical Therapy, University of Michigan-Flint

Abstract: Rates of medical comorbidities of diabetes, cancer, congestive heart failure (CHF) increase with aging. Additionally, on average, 28.5% of older adults (65 years old or older) experience falls each year. With falling being one of the main reasons that older adults are hospitalized, it is important to describe falls and fall risks in older adults across different diagnostic groups. The aim of this study was to describe falls incidence and injurious falls in three groups of older adults across three different time points. A secondary analysis was performed using data from the Health and Retirement Study cohorts 2012, 2014, and 2016 of older adults with CHF, cancer, or diabetes. Falls incidence, number of falls, and injurious falls are described by diagnostic category for each cohort. About 39% of older adults with a history of cancer experienced at least one fall. Nearly 41% of those with diabetes over the age of 65 reported a fall. Half of the older adults with CHF reported falling. The injury rate per fall was similar in each cohort with roughly one in every three falls being an injurious fall. In older adults, falls incidence and injurious falls differ depending on the type of the medical diagnosis with the greatest falls incidence in older adults with CHF.

#78

Title: White Chapel Memorial: A Secular Cemetery

Author(s): Farkhanda Khalid

Faculty sponsor(s): Ronald Stockton

Affiliation: Political Science, University of Michigan-Dearborn

Abstract: White Chapel Memorial Park Cemetery in Troy was founded a century ago as a public cemetery. There are "gardens" for different religious and affiliation groups including Catholic, Muslim, and veterans but the unique monuments in the cemetery are those to Odin, and to the Polar Bear Brigade of World War I fame.

#79

Title: Wadi As Salam, The world's Largest Cemetery

Author(s): Zeinab Alsheraa

Faculty sponsor(s): Ronald Stockton

Affiliation: Political Science, University of Michigan-Dearborn

Abstract: Wadi As Salam, The Valley of Peace is the biggest cemetery in the world. It is located in Najaf, Iraq. It is where some of the early Muslim, particularly Shia, founders are buried. Many people want to be buried near their shrines.

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**Special thanks to the entire planning committee, executive officers,
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MEETING OF MINDS XXVII CALL FOR PAPERS

Papers presented at the Meeting of Minds conference on May 10, 2019 are being solicited for publication in the next volume of the *Meeting of Minds Journal of Undergraduate Research*.

Visit: www.umflint.edu/research/MOM for editorial and submission guidelines.

Deadline for submission: Friday, July 26, 2019